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A PRACTICAL TREATISE

ON THE

DISEASES

OF

INFANCY AND CHILDHOOD.

BY

T. H. TANNER, M.D., F.L.S.,

LICENTIATE OF THE ROYAL COLLEGE OF PHYSICIANS; LATE PHYSICIAN
TO THE HOSPITAL FOR WOMEN, &c. &c.

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WILLIAM FERGUSSON, F.R.S.,

PROFESSOR OF SURGERY IN KING'S COLLEGE, LONDON;
SURGEON-EXTRAORDINARY TO THE QUEEN;
&c. &c. &c.

THIS VOLUME

IS MOST GRATEFULLY AND AFFECTIONATELY

DEDICATED,

BY HIS FRIEND AND FORMER PUPIL,

THE AUTHOR.

PREFACE.

The following pages have been written with the view of presenting to the student and the practitioner of medicine a complete work on the Disorders of Infants and Children, within a moderate compass; together with such a series of observations upon the hygienic and general management of the young, as may lead to the prevention of much of the disease which now exists.

In performing my task, my aim has been always to avoid too great diffuseness; as well as to supply my readers with such facts as may lead them to think for themselves, rather than to overburden their memories with the various opinions of others.

10 *Charlotte Street, Bedford Square.*
1 *February,* 1858.

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A PRACTICAL TREATISE ON THE DISEASES OF INFANCY AND CHILDHOOD.

CHAPTER I.

GENERAL OBSERVATIONS ON THE PERIOD OF INFANCY AND CHILDHOOD.

SECTION I.—INTRODUCTION.

THE trite maxim, that—*a large and healthy population is the life and strength of a nation, and the source of its success in science, art, agriculture, and commerce*, can hardly be quoted too often; since, though none probably will deny its truth, yet there are very many who will not act upon the precepts that such an observation ought to inculcate. It would indeed be well if our political economists could be led to believe, that in London and most of our large towns and cities, there are numerous gold mines, that only require working with energy and perseverance to yield a more satisfactory return than the auriferous veins of Australia. Were the filthy streets and courts at present inhabited by no small portion of the population swept away, and replaced by thoroughfares into which light and fresh air could freely penetrate, the Registrar-General's returns of deaths would be certainly lessened: while, with model lodging-houses and other healthy dwellings, many of the indigent would become useful and respectable members of society, instead of—as now—incumbrances upon the industrious. The *facilis descensus* has been tested by many a poor man, who, driven from his miserable, ill-ventilated, and badly-drained home, has been led to seek a solace at the gin-palace; whence drink, idleness, and poverty have soon conducted him to the hospital, workhouse, or prison. The very usefulness of the poorer classes, as instruments for the creation of wealth and all the luxuries it procures, ought to be sufficient to make us mindful of their claims; and the most urgent of these claims is—that they be saved from all unnecessary and preventible disease. At present—to take only one example from a host—scrofula, in one or other of its numerous forms or complications, runs riot; and the children of the poor are either prematurely cut off, or the seeds of future disease are sown, to bear subsequently an abundant harvest.*

A statistical inquiry into the amount of mortality which occurs in infancy would be out of place in the present treatise. It may suffice to mention, that there is distinct evidence to prove that in the present day more than one-fourth—in the unhealthy districts of some large manufacturing towns not less than one-third, and even a greater proportion—of all the children ushered into the world, and born to endure for threescore years and ten, are cut off within the first five years after birth:† and if we may argue from past experience, there is but little doubt that much of this mortality is due to the unhealthiness of the majority of the homes of the working classes; the unjustifiable use of stimulants, drugs, and quack medicines containing opium, &c.; the prejudices, neglect, and ignorance of nurses and parents; and to other removable causes. So directly is infant life influenced by good or bad management, that less than a century ago the London workhouses presented the almost incredible result of twenty-three deaths in every twenty-four infants under one year of age! this frightful devastation being allowed to go on for a long time almost unnoticed, as it was deemed beyond the reach of remedy. But when, in consequence of a parliamentary inquiry, an improved system of management was adopted, and the parish officers of London and Westminster were obliged to send their infant poor to be nursed in the country, at proper distances from town, the proportion of deaths was speedily reduced from 2,600 to 450 a year.*

---

* The deaths of 96,521 persons were registered in the last quarter of the year 1856; and the rate of mortality in the three months was 20 per 1000 per annum. In the districts comprising the chief towns in which nearly half the population is living, the people died at the *rate* of 24, while in the remaining districts, comprising small towns and country parishes, the death-rate was 17 in 1000. This shows in a strong light how much room there is for improvement in our large towns; for it is well known that many fatal agents which may be arrested are at work in the small towns and country parishes.—*Registrar-General's Quarterly Return of Births and Deaths in England, for Oct., Nov., and Dec.*, 1856.

† *Registrar-General's Annual Reports of Births, Deaths, &c., from* 1838.

Mr. McCulloch, in his *Statistical Account of the British Empire*,† quotes a table from the *Lancet* of 1835-36, showing the births and deaths under five years of age, according to the London Bills of Mortality, for 100 years, in five periods of twenty years each, and also the number dying under five years of age out of 100 born; the results of which demonstrate that the mortality of children in London has been constantly on the decline. The table runs thus:—

	1730–49	1750-69	1770–89	1790–1809	1810–29
Total births . .	315,156	307,395	319,477	386,393	477,910
Total deaths under five years . .	235,087	195,094	180,058	159,571	151,794
Dying per cent. under five years	74·5	63·0	51·5	41·5	31·8

Here it appears that in the 20 years, 1730–49, out of 100 born, 74·5 died under the age of 5 years; while during the 20 years, 1810–29, only 31·8 died out of the same number. If, then, half the children formerly cut off at an early age in England be now reared, it will appear—argues Mr. McCulloch, rather illogically—that a vast number of weakly children are annually introduced into the English population; and that unless we take proper means to fortify the constitution in manhood, the relative vigour will not increase in the same ratio as the population.

Again, even as late as 1838, we find Mr. Maclean, in his visit to St. Kilda,‡ stating that the population of this island is decreasing rather than increasing, owing to the excessive mortality at all times going on in infancy, for "eight out of every ten children die between the eighth and twelfth day of their existence." The great, if not the only cause of this terrible destruction of life, was the filth amidst which the inhabitants lived, and the noxious effluvia which pervaded their houses, owing to their being used during the winter months as stores for manure; since the air of the island was good, the water excellent, and the clergyman, who lived exactly as his neighbours did, except as regarded the condition of his house, had a family of four children, all strong and healthy.

---

* Dr. Andrew Combe, *On the Management of Infancy*. 6th ed., p. 3. Edinburgh, 1847.

† Page 543. 4th ed. London, 1854.

‡ Chambers' *Edinburgh Journal*, Nov. 1838.

But the most striking proof, probably, that can be given to show that infant mortality may be diminished by very ordinary care, is to be found in the records of the Dublin Lying-in Hospital. It appears that, from the foundation of this hospital in 1757 up to 1783, the number of infants born alive in its wards amounted to 17,650, of which number 2,944 had died of convulsions, or what is commonly termed nine-day fits; so that, for the first twenty-five years this institution was open, nearly every sixth child died. Such excessive mortality prompted Dr. Joseph Clarke, on being appointed the Master, to seek minutely for its cause; and he was quickly led to infer that something defective existed in the construction of the building, preventing its perfect ventilation. This soon proved to be the case; for on the adoption of measures which rendered the wards more airy and more easily kept clean, the mortality at once diminished, until of 8,033 children, born subsequently, only 419 died, that is about 1 in 19¼, or from 5 to 6 in 100.[*] Happily this rate of mortality has continued to diminish; for, during the Mastership of Dr. Collins, between the years 1825 and 1832, the total number of children born was 16,654, of which number 284 died previous to the mother leaving the hospital, or about 1 in 58½. This moderate mortality will appear almost trifling when it is considered that it includes not only all the deaths that occurred in children born prematurely, and in twins, but also every instance where the heart ever acted, or where respiration ceased in a few seconds after birth.[†]

What then do these observations teach us? Simply this:—

---

[*] *A Sketch of the Life and Writings of Dr. Joseph Clarke.* By Robert Collins, M.D. London, 1849.

[†] *Practical Treatise on Midwifery.* By R. Collins, M.D. London, 1836.

that disease and untimely death result not from necessity, or from chance, or accident, but really from the infringement of those laws and conditions, on the due observance of which the Creator has decreed that the health and welfare of the various organs of the body shall depend. As surely as we make sanitary improvements, so as certainly will our yearly death-roll be diminished; while at no period of life will the decrease of mortality be more marked than in that of infancy. The true essentials for securing infant health, in the great majority of cases, are few and simple. Pure air, cleanliness, suitable clothing, with plain and natural food, will do very much towards preventing disease; while prompt and skilful medical aid will equally assist the *vis medicatrix naturæ* in conquering that which may be inevitable. The time has fortunately passed away, when physicians and surgeons felt an aversion to undertaking the treatment of any severe infantile disorder; for, systematic knowledge has taken the place of conjectural judgment, and with increased experience and practical skill, has come greater confidence in the legitimate use of the remedies with which Nature has so bountifully supplied us. Hence, although our first exertions are to be directed towards the promotion of health and the prevention of disease by the means just noticed, and especially by so improving our large towns, that they may no longer be designated "the graves of mankind;" yet we must also be careful so to study our art, that we may be enabled successfully to cope with those disorders and unfortunate accidents to which all organized beings are more or less subjected, and which—in the present state of science—seem unavoidable.

SECTION II.—THE AVERAGE DURATION OF LIFE.

Addison, in one of the numbers of the *Spectator*,* has an allegory in which he compares human life to a bridge standing in the midst of the tide, consisting of threescore and ten entire arches, with several broken arches, making a total of about one hundred. "As I was counting the arches, the Genius told me that this bridge consisted at first of a thousand arches, but that a great flood swept away the rest, and left the bridge in the ruinous condition I now beheld it. But tell me further, said he, what thou discoverest on it. I see multitudes of people passing over it, said I, and a black cloud hanging on each end of it. As I looked more attentively, I saw several of the passengers dropping through the bridge into the great tide that flowed underneath it; and, upon further examination, perceived there were innumerable trap-doors that lay concealed in the bridge, which the passengers no sooner trod upon but they fell through them into the tide and immediately disappeared. These hidden pitfalls were set very thick at the entrance of the bridge, so that throngs of people no sooner broke through the cloud, but many of them fell into them. They grew thinner towards the middle, but multiplied and lay closer together towards the end of the arches that were entire."

---

* No. 159. *The First Vision of Mirza.*

The following remarks—which, together with the Life-Table, are compiled from the Registrar-General's *Fifth Annual Report*—show how many fall through these hidden pitfalls at the different periods of existence; and hence, to a certain extent, they measure the danger which we all have to encounter in passing over this bridge of life:—

Let us suppose that 100,000 children were born alive on the 1st January, 1841; and that they were the offspring of all ranks and classes of Englishmen. From the usual proportion of the two sexes registered, it will appear that 51,274 were boys, and 48,726 girls. Of the 100,000 children, 14,631 have perished during the first year, leaving 85,369 alive on 1st January, 1842: they were exactly a year old, and are placed against the age "1" of the table. On 1st January, 1843, the survivors were two years old, and in number 80,102; so that 5,267 have died in the second year. On 1st January, 1846, the fifth birthday was attained, and there were 74,201 living. Consequently, in the first five years, 25,799 children, out of 100,000, have died. During the next five years, when the children leave home more, and when—as it appears from the parliamentary returns—great numbers pass part of the day at school, the mortality becomes considerably less, so that we find 70,612 alive at the age of ten; while from ten to fifteen the loss is small, 68,627 living to the latter age. The loss of life among girls now becomes rather greater than among boys, and it continues so for the ensuing five years, when both sexes are more detached from the care of their parents, and the majority pursue the professions or trades by which they afterwards gain a livelihood. The mortality appears to increase rather rapidly from twelve to fifteen; and then at a slow, regular rate from the age of fifteen to fifty-five: 66,059 attain the age of twenty. It was stated that 51,274 boys were born alive to 48,726 girls; but the mortality in infancy is greater among boys than girls; so that 31,958 males attain the age of twenty-five, and 31,623 females attain the age of twenty-four. This is about the average age of marriage in England; and the number of the two sexes is then nearly equal. The chance of living from twenty-five to forty-five is rather in favour of English women; the violent deaths of men counterbalancing the dangers of child-bearing. At the age of sixty, 37,996 will be still alive; while 24,531 attain the age of seventy, *i. e.*, 11,823 men, and 12,708 women—the mortality of the latter being less than that of the former after fifty-five. At the age of eighty, there is but little doubt that about 9,000 of the 100,000 will still be found alive; but after this period the observations grow uncertain, although we may calculate that 1,140 will attain the age of ninety, 16 will be centenarians, and 1 man and 1 woman, out of the 100,000, may remain to complete their one-hundred-and-fourth year.

For convenience of reference, these calculations are arranged in the following table, which also contains a register showing the *expectation of life*:—*i. e.*, the mean number of years which, at any given age, the members of a community, taken one with another, may expect to live. The *mean duration of life* is found by adding the age to the expectation of life:—thus, the mean duration of a boy's life at five years of age is $5 + 49 \cdot 64 = 54 \cdot 64$. The *probable duration of life* is the age at which a given number of children born into the world will be reduced one-half; so that there is an equal chance of their dying before or after that age. Thus out of 51,274 males and 48,726 females—a total of 100,000 new-born infants—about one-half of each sex will have died before completing the age of 45; so that the probable life-time of an infant at birth is 45 years.

LIFE-TABLE for ENGLAND.

Age.	Living.	Males.	Females.	Expectation of Life.		
				Persons.	Males.	Females.
0	100,000	51,274	48,726	41·16	40·19	42·18
1	85,369	43,104	42,265	47·13	46·71	47·55
2	80,102	40,388	39,714	49·19	48·82	49·57
3	77,392	39,018	38,374	49·89	49·52	50·29
4	75,539	38,064	37,475	50·11	49·74	50·48
5	74,201	37,385	36,816	50·01	49·64	50·38
10	70,612	35,564	35,048	47·44	47·08	47·81
15	68,627	34,573	34,054	43·74	43·35	44·13
20	66,059	33,324	32,735	40·34	39·88	40·81
25	63,295	31,958	31.337	36·99	36·47	37·52
30	60,332	30,473	29,859	33·68	33·13	34·25
35	57,172	28,867	28,305	30·40	29·83	30·99
40	53,825	27,145	26,680	27·14	26·56	27·72
45	50,301	25.311	24,990	23·86	23·30	24·43
50	46,621	23,376	23,245	20·55	20·02	21·07
55	42,796	21,355	21,441	17·16	16·68	17·63
60	37,996	18,808	19,188	14·00	13·59	14·40
65	31,852	15,589	16,263	11·20	10·86	11·52
70	24,531	11,823	12,708	8·78	8·51	9·03
75	16,664	7,867	8,797	6·74	6·53	6·92
80	9,398	4,316	5,082	5·07	4·92	5·20
85	4,021	1,780	2,241	3·75	3·64	3·83
90	1,140	481	659	2·74	2·68	2·77
95	174	69	105	2·13	2·22	2·06
100	16	7	9	..	..	..
104	2	1	1	..	..	..

This table reads thus:—Of 100,000 births, 51,274 will be male children, and 48,726 females; of which number 85,369 will be alive at the end of one year, or 43,104 males, and 42,265 females. So again, of the 100,000, one male and one female will live to the age of 104.

To learn the expectation of life the table should be read as follows:—At birth a child's expectation of life is 41·16 years; if a boy, 40·19 years; if a girl, 42·18 years. Again, at the age of 40, a person's expectation of life is 27·14 years: hence the mean age to which persons who attain the age of 40 live is, 40+27·14 = 67·14 years.

With regard to the *sex of children* it may be interesting to the reader to learn, that although nothing positive is known, yet it seems very probable that the differentiation depends on the relative ages of the parents. The following table, by

Mr. Sadler,* indicates the proportion in Great Britain of male births to 100 females, under the conditions mentioned in the first column :—

Father younger than mother		86·5
Father and mother of equal age		94·8
Father older by	1 to 6 years	103·7
,,	6 to 11 ,,	126·7
,,	11 to 16 ,,	147·7
,,	16 and more	163·2

Thus it seems that the more advanced age of the father has a very decided influence in occasioning a preponderance of male children ; and this tallies with what we know to be the case, —for, as a rule, in this country the husband is older than the wife, and the proportion of births is about 106 males to 100 females.

SECTION III.—THE CONDUCT OF WOMEN DURING PREGNANCY.

1. General Observations.—There are but few medical practitioners who are not occasionally consulted as to the care which women ought to take of themselves during pregnancy, with regard to their own and their infant's welfare ; and it is, consequently, most desirable that we should be able and anxious to give a few sensible directions on the subject. However highly a woman may have been educated, she unfortunately finds, when she has no longer to live for herself alone, that her acquirements and accomplishments are but of small service to her; for although she may have gone through a long and expensive course of education, yet she has learnt little or nothing of the most important of her social duties. On consulting those friends and acquaintances of her own age, to whom she can speak unreservedly, she sees that they know but little more than herself; and hence it is often thought necessary to seek advice on this matter from some nurse or other time-worn dame, who, probably, has certain absurd traditional precepts which she delights in promulgating as immutable laws ; as if she believed, with ancient Thomas Hearne, that "when laudable old customs alter, 'tis a sign

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* *Law of Population.* Vol. ii., p. 343. Quoted by Dr. Carpenter in *The Principles of Human Physiology.* 5th ed., p. 856. London, 1855.

learning dwindles."[*] Thus mischief is often caused not from any wilfulness on the part of mothers, but merely from ignorance of the injury they inflict upon their progeny by carelessness and a disregard of a few common-sense rules as to regimen, &c.

The grand rule for a woman to adopt on becoming pregnant is, to sustain her general health in its highest state of efficiency. This is to be accomplished by attention to diet, clothing, cleanliness, exercise, and moral discipline.

2. THE DIET.—This should be simple, light, nutritious, and adapted to the requirements of the individual and the condition of the digestive organs. Highly-seasoned or rich food is bad, tea and coffee should be used only in moderation, and alcoholic stimulants are—to say the least—generally unnecessary. It is often erroneously thought that an unusual supply of nourishment is required during pregnancy to support the strength and aid the development of the fœtus: consequently, either an increased supply of food is taken, or a change is made from a plain and nourishing diet to full and generous living. Both of these errors are to be avoided: for they will surely either give rise to a state of plethora, as injurious to the mother as to the embryo; or will produce in the former, debility, dyspepsia, nausea, heartburn, &c., and in the latter, constitutional feebleness, as, of course, the results are the same to the infant, whether the insufficient nourishment results from want of food or from inability of the mother's stomach to digest it. Where the digestive powers are good, however, and eating is not followed by oppression or langour, there can be no harm in satisfying the appetite with such food as the patient may be accustomed to, and which she knows from experience agrees with her. A too spare diet is, on the other hand, no less injurious and reprehensible. Unhappily, however, it is less easily avoided; and many of the wives of the labouring classes not only suffer much themselves from their inability to procure a due supply of wholesome food, but, in consequence, give birth to feeble and unhealthy children, who ultimately perish from strumous or tuberculous disease.

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[*] *Reliquiæ Hernianæ*, &c. Collected by Philip Bliss, Principal of St. Mary's Hall. Oxford, 1856.

The craving and capricious appetite from which pregnant women often suffer, most frequently requires but a little self-denial to be controlled, and is in no instance to be remedied by any excess in food or wine. So also with respect to *longings* for unusual or extraordinary kinds of food, which should seldom be yielded to. Nothing, indeed, can be worse than pandering to these symptoms of a depraved digestion, and nothing is so likely to perpetuate them, to the risk of the mother and fœtus. A gentle laxative—rhubarb and magnesia, castor-oil, or a seidlitz powder—with a few hours' abstinence, will often remove them. Violent medicines, whether purgative or otherwise, are, of course, to be avoided during pregnancy; their exhibition being fraught with equal danger both to mother and child.

3. Clothing.—This should be warm and comfortable; especially avoiding tight bands, and the use of tightly-laced, stiff, unyielding corsets. The breasts and body particularly require to be secured from injurious compression, and the dress and under-garments should be so made that they may adapt themselves to the increasing size of these parts.* To attempt forcibly to compress the abdomen, while Nature is gradually enlarging it for the accommodation and development of the fœtus, is not only most absurd, but dangerous; for the circulation of the blood being impeded, a liability is induced to disorder of the stomach and liver, to uterine hæmorrhage and abortion, or to hæmorrhoids. Delicate women, especially if they have long been accustomed to corsets, and if their abdominal muscles are relaxed, sometimes derive benefit and support from an elastic bandage or a broad flannel roller applied round the body; it must not be tight, however. Where the circulation of the blood is languid, the lower extremities and feet will be cold, and will require to be protected by warm stockings and thick boots.

4. Cleanliness.—Cleanliness, so conducive to health at all

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* The origin of the word *enceinte* may serve to remind us that the Roman ladies were wiser, in some matters at least, than many of our countrywomen in the present day: for on the occurrence of pregnancy, the tight girdle or cincture, which was at other times worn round the waist, was discontinued. Hence the pregnant woman was said to be *incincta*, or unbound.

times, is remarkably so during gestation. Few things will contribute more to the comfort of the pregnant woman than sponging and tepid bathing. A tepid bath repeated every morning, or every second morning, will soothe nervous excitement, prevent congestion of the viscera, and promote the healthy action of the skin: a flesh-brush or coarse towel should be used immediately afterwards.

5. EXERCISE.—One of the simplest means of averting disease, and of contributng to an easy recovery after delivery, is exercise in the fresh air. Hence a walk—which is the best means of taking exercise—should be had daily during the whole period of pregnancy; taking heed, however, as the period of delivery approaches, that too much fatigue is not induced. If, in addition, a ride in an open carriage is desired, it will be useful. Riding on horseback, dancing, and other kinds of violent exertion, are to be avoided; as are also late hours, and remaining long in bed in the morning. Care must also be taken that the bed-room is large and well-ventilated, so that pure air may at all times be breathed.

6. MORAL DISCIPLINE.—To insure mental and bodily health for her offspring, it is not only necessary that the future mother observes the external and physical laws of health, but she must also regulate her mental constitution, and her moral feelings and affections. Hence she should endeavour to be calm and cheerful, to subdue ill-regulated desires and wayward fancies, to keep her mind engaged by invigorating occupation and attention to her ordinary social duties, and to look forward to her labour with hope and confidence. If oppressed by a feeling of despondency, or disheartened by an impression that her labour will end fatally, the practitioner should endeavour to correct any derangement of the bodily health which may be present; while, at the same time, he will hardly be exceeding his duty if he gently prompt his patient to put her trust in the fatherly love of Him, who "hath given men skill, that he might be honoured in his marvellous works." The pregnant woman should also especially avoid all strong mental emotion—as immoderate joy, grief, anger, despair—since the vital functions are much influenced thereby: and for the same reason she should eschew all exciting amuse-

ments, as theatres, balls, &c. The children of such ladies in high life as enfeeble their health by late hours, hot and crowded rooms, and irregular diet, are more disposed to convulsive affections than the children of those who are regular in their mode of living, and who enjoy the calm tranquillity of a country life.*

To show how strongly the happiness of the mother during pregnancy affects the infant, I may mention, that, in the chief cities of Europe, the mean proportion of still-born children is one in every twenty-two births; the number being three times greater among illegitimate than among legitimate children.† Baron Percy relates, that after the siege of Landau, in 1793, of 92 children born in the district soon after, 16 died at the moment of birth, 33 languished for from eight to ten months and then died, 8 became idiotic and died before they reached the age of five years, and 2 were born with several of their bones fractured; so that 59 children out of 92 seem to have died owing to the mother's anxiety and misery, and the results upon her organization.‡ The philosopher Hobbes is well known to have ascribed his own excessive timidity and nervous sensibility to the fear in which his mother lived before he was born, owing to the threatened invasion by the Spanish Armada; and which increased to such a pitch on the news of its actual approach, as to bring on premature labour.§ In like manner the constitutional nervousness, the want of "firm resolve," and the extreme aversion to the sight of a drawn sword, always shown by James I. of England, was commonly attributed to the constant anxiety and apprehension suffered by Mary during the period of gestation; as well as to the brutal murder of Rizzio having been perpetrated in her presence during the same period. || On the other hand, it is a well-known fact that almost all great men have had mothers remarkable for their mental endowments and activity; al-

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* North, *On the Convulsions of Infants*, p. 14. London, 1826.

† Quetelet, *Sur l'homme et le développement de ses facultés*. Vol. i., p. 121. Paris, 1835.

‡ *Dictionnaire des Sciences Médicales:* article—Détonation.

§ Dr. A. Combe. *Opus cit.*, p. 24.

|| The character of this monarch is admirably portrayed by Sir Walter Scott in *The Fortunes of Nigel*.

though too much importance must not be attributed to this circumstance, since, it may be said, such parents are precisely those who would pay the greatest attention to the education and early training of their offspring.

From these remarks it must not be thought that I agree with those practitioners who regard many of the diseases and deformities of the fœtus as due to the unsatisfied longings or the wayward imagination of the mother. The fables of mother-marks, defects of form, &c., are perhaps hardly worth alluding to; but it may be mentioned, that Dr. William Hunter investigated this subject, at the Lying-in Hospital to which he was attached, and that in 2,000 cases there did not occur a single instance in which there was any coincidence between the fright, or accident, or longings of the mother, and the deformity of the child. There are certainly many curious cases recorded which I cannot venture to explain; but I believe that were all the circumstances known, the mystery would vanish. While writing these pages a case has been brought under my notice which, as it tends to confirm this opinion, may be related. An old patient inquired one day if I had ever seen an infant with two tongues; and as I replied in the negative, she undertook to show me one. Accordingly, in the following week, she sent her sister and child to me; when the former stated, that three or four months before her labour she went into a builder's yard, and was much alarmed by seeing a large dog with its tongue hanging out of its mouth. Some days after her confinement she looked in her child's mouth and saw that it had two tongues: she showed it to her medical man, and he confirmed her opinion. On examining for myself, I found that the *sublingual gland* was well developed, as it often is in infants; and that this had been mistaken for a second tongue.

What I wish, however, to impress on my readers is this:—that as disease may mutilate or death destroy the child, while still within its mother's womb, so every precaution should be taken to maintain the parent's *body* in a state of health; and that, as the general condition of the mother's *mind* has an important influence upon the future mental and perhaps bodily health of her offspring, it consequently follows that all those about her should contribute as much as possible to her comfort and cheerfulness. This is not to be done by foolish indulgence; but rather by forethought in a thousand little matters which individually may appear trivial, by good-natured equanimity, and by removing or smoothing all sources of care and anxiety. The nervous susceptibility during pregnancy is unusually acute, and hence a little tact and forbearance will be found necessary.

SECTION IV.—PECULIARITIES OF THE INFANT STRUCTURE AND CONSTITUTION.

In considering the peculiarities of structure and function by which the infant is characterised, and in treating subsequently of the diseases of infancy and childhood, I shall regard the condition of infancy as extending from the time of birth until the end of the second year, when the first dentition is generally completed: while the age of childhood will be supposed to comprehend two epochs; the *first*, extending from the termination of the second year to the end of the seventh or eighth, the time at which the second dentition is terminated; and the *second*, reaching from the end of the first epoch to puberty, *i. e.*, consisting of the period of life between about the eighth and fourteenth or fifteenth year, and which is commonly known as girlhood or boyhood. Hence, adopting the old Aristotelian division of human life into three stages—growth, maturity, and decline—we have the first comprehended under the head of infancy and childhood.

The complexity and completeness of man's body, the variety of its parts, the diversity of its functions, and the high faculties of sense and intellect with which it is crowned, have in all ages been themes on which writers have loved to dilate; and the ancient opinion, "that man was microcosmos, an abstract or model of the world," seems, on consideration, almost justified. However this may be, it is certainly no poetical fiction to regard the infant as the abstract of the man; for, on examining it at birth, we find that it possesses the same organs as the adult, though these differ in their anatomical structure, and are remarkable for their imperfect development; while the same processes of waste and restoration, of growth and decay, are continuously being carried on. The chief structural differences are these: the tissues generally are softer, much more vascular, and more loaded with fluid; the glandular, lymphatic, and capillary systems predominate; the skin and mucous membranes are very delicate, soft, and sensitive; the brain is large and vascular, though so soft as to be almost fluid; and there is excessive nervous excitability. The term of infancy being essentially the period of growth, the organs of alimentation are those which are the most fully developed, as they are those which are the most actively employed; indeed, it may be said that at this age the functions are confined almost exclusively to nutrition.

As regards the *general appearance* of the new-born infant, it may be first remarked that its length varies from about 16 inches to 22; the average, probably, being between 18 and 19, though Roederer states it to be 20½ inches.* The mean weight is about 7 lbs. avoirdupois, or one-twentieth of that of the adult. Dr. William Hunter states, that of many thousand new-born perfect infants weighed at the British Hospital in London by Dr. Macaulay, the smallest was about 4 pounds, the largest 11 lbs. 2 oz., while the greater number varied from 5 to 8 lbs. The average weight of 26 children at the natural period, weighed by Roederer, was about 6½ lbs.; the lightest 5½ lbs., and the heaviest 8 lbs. The length of male slightly exceeds that of female children, while the difference in weight is estimated by Dr. Clarke at about 9 oz. avoirdupois. In the case of twins, the average weight of each twin is in general less than that of children born at single births, though the combined weight of both is greater. Dr. Clarke found that the average weight of 12 twins was 11 lbs. avoirdupois each pair; the heaviest being 13 lbs., and the lightest 8¼ lbs.*

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* M. Quetelet's interesting deductions as to the growth of human stature, are as follows:—1. The growth is most rapid immediately after birth, amounting in the first year to nearly eight inches. 2. The growth diminishes as the child advances towards the fifth year; thus, during the second year the increase is only half what it was the first, while, during the third year, it is not more than one-third. 3. After the fourth or fifth year, the stature increases pretty regularly—about two inches annually—until the age of sixteen. 4. After puberty the stature increases slightly—about one inch a year—until the age of twenty-five, when it seems to be completed. The annual growth of the female is less than the male, and her development is completed earlier.—*Cyclopædia of Anatomy:* article—Age.

The *skin* is very vascular, sensitive, and delicate, and usually of a deep-red colour; it is covered with an unctuous matter, called *vernix caseosa;* and a few days after birth the cuticle desquamates. The *limbs and prominent parts of the body* are well protected by fat and cellular tissue filled with serum; the *tendons* and *ligaments* are imperfect; and the *muscles* are soft and gelatinous. The *bones* are small, chiefly cartilaginous, and deficient in earthy matter; those of the skull and ribs are the most advanced in ossification. The *bones of the skull* are united to each other by membrane, the sutures not having begun to form. The membranes cover six openings called *fontanelles*, which gradually close until about the fifth year, when the bones are found united by suture. The *long or cylindrical bones* contain no distinct medullary cavity, but present in their interior a soft or loose bony texture: the epiphyses are in the shape of grayish jelly-like matters beginning to present grains of bone. The period at which ossification is finished varies: the epiphyses are rarely firmly united with the osseous cylinder till between the 16th and 17th years. The *lower extremities* are less developed than the *upper;* the *pelvis* is small, and looks contracted; the *thorax* small, flattened at its sides, but prominent in front; while the *head* and *abdomen* are disproportionately large compared with the rest of the body, and the size they attain in after life. There is generally some hair on the scalp.

The *digestive organs* are perfectly adapted for producing rapid changes in the food introduced into them, and for thus affording a continued supply of the materials for nourishment and growth. The mouth, though apparently imperfect from the absence of teeth, is fully and admirably formed for extracting the food prepared by the mother, and conveying it to the pharynx. The stomach is small, long, and somewhat resembles the large intestine in form; its anterior or lesser curvature being but slightly arched, while the larger curvature is scarcely developed—an arrangement which shows that this viscus is not suited for receiving much food at a time, or for retaining it for any period. The intestines are also relatively smaller and shorter than in the adult, and their peristaltic actions more rapid; so that all excrementitious matters are quickly got rid of, the infant generally having an evacuation every five or six hours. The mucous membrane of the whole of the alimentary canal is thick, soft, villous, vascular, and freely bedewed with mucus: it is very sensitive, and readily irritated by improper food. The salivary glands, the pancreas, the lacteal vessels, and the mesenteric glands are largely developed; the kidneys are large, and the supra-renal capsules of considerable size, but they soon diminish; the spleen is small. The liver at birth occupies almost one-third of the abdominal cavity, but becomes smaller—especially the left lobe—as the circulation is changed by the obliteration of the umbilical vein and ductus venosus, and the development of the vena portæ. The intestines contain a peculiar dark-coloured substance, called meconium; which is the result of accumulated secretion.

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* *Encyclopædia Britannica.* 8th edition: article—Anatomy.

The *respiratory organs* undergo a more remarkable change directly the child is born than any of the other parts of the body; the lungs, on being permeated by air, becoming increased in size, light and vesicular in structure, and of a deep-red colour, in the place of being small, dense, and of a brownish colour as they were in the fœtal state. Occasionally it happens—when, from any cause, the function of respiration is established with difficulty—that portions of the lungs remain solid and unaërated: these portions are then said to be in a condition of atelectasis.* The respirations are quick and forcible, and during the first year range from 35 to 40 in the minute, being nearly double those of an adult; but as growth proceeds, as the infant's weakness is lessened, and as the vital processes are rendered less active, they gradually become slower. In infancy, too, the consumption of oxygen is smaller, and the power of generating animal heat—a function so closely connected with respiration—less, than at later periods. The thymus gland, so large in the fœtus that it occupies a considerable space in the upper and anterior part of the thorax, soon begins to diminish after birth, though it remains of considerable size during the first year: in the adult it can scarcely be recognized. The *organs of circulation* present many remarkable peculiarities in the early stage of infancy. The volume of the heart is proportionably large; its parietes are softer and paler than in after life, and of nearly equal thickness throughout; and the left cavities are larger than the right, instead of the reverse, as they ultimately become. The foramen ovale and ductus arteriosus usually become obliterated, or nearly so, before or about the tenth day after birth;* after which the walls of the left ventricle quickly increase in thickness, and its cavity begins to diminish in size. The action of the heart is quick, varying from 120 to 140 beats in a minute.

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* From ατελης, imperfect, and εκτασις, expansion. The term was first applied by Dr. E. Jörg.

In examining the *nervous system* we find the brain large, soft, imperfect in structure, and about 10 oz. in weight—the adult averaging from 3½ to 4 lbs. The convolutions are imperfectly marked, as we should expect they would be, if we believe—as most physiologists do—that intelligence is in direct proportion to their extent; while the cineritious or cortical portion scarcely differs in colour from the medullary. The meninges are more vascular than in the adult. The structure of the spinal cord and nerves is more perfect than that of the brain, these parts being devoted to the more primitive functions of sensation and voluntary motion.

The *organs of the external senses* are all present at birth, and the nerves distributed to them are large. The *eye* seems fully developed, although for the first few days the child gives but little indication of visual sensation; the *ear* is imperfect, the new-born infant being probably deaf; the *nose* is small, and the nasal fossæ are wanting; and the *sense of touch* is very imperfect. The *larynx* is very small, but increases in size as the infant begins to articulate when from six to twelve months old: most children speak plainly when from two to three years of age. The *genital organs* are small, except the clitoris and nymphæ of the female, which often appear disproportionately large: the evolution of the generative apparatus marks the age of puberty.

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* This patent condition of the foramen ovale and ductus arteriosus continues, according to the researches of M. Florens, during eighteen months of extra-uterine life in the human species.—*Histoire de la Découverte de la Circulation du Sang*, pp. 67, 69. Paris, 1854.

SECTION V.—PECULIARITIES OF DISEASE IN INFANCY AND CHILDHOOD.

During the tender periods of infancy and early childhood there not only exists a predisposition to disease, owing to the weak organization of the system, and the ease with which impressions are made; but the maladies of this time of life are severe and insidious in their nature, soon give rise to organic change, and run their course with a rapidity of action not seen in the adult. New symptoms, moreover, succeed each other very quickly, and complications soon arise. As might be expected, then, there is more sickness in infancy than at any other epoch. The activity of the vital powers generally, the quickness and force of the circulation, and the abundant way in which blood is supplied to the various tissues, accounts for many of the disorders assuming an inflammatory type, for the readiness with which serum or lymph is effused, and for the reactions being intense and dangerous; while the great susceptibility of the nervous system causes all, even local, affections, to be very severely felt by the whole system. Hence no indisposition in an infant is to be regarded as trifling. At the same time it is indisputable that this activity of the vascular and nervous systems confers an energetic reparative power upon the infant, and most materially aids it in recovering from some severe affections, which would often prove fatal to one more advanced in age.

The skin, and the mucous membranes of the respiratory organs and the digestive tube, being the principal surfaces upon which morbid impressions are received in the infant, are consequently those in which disease usually commences. It seldom, however, long remains confined to these tissues, but sooner or later is reflected upon other and often distant organs; thus either increasing the extent of morbid action, or changing its situation by gradually ceasing at the part where it arose, as it augments in severity in the tissue secondarily affected. In this manner diseases of the skin, alimentary canal, and respiratory organs reciprocally produce each other;

and thus we may account for the coexistence and intimate relation between inflammation or irritation of the mucous membrane of the digestive canal, and an analogous state of disease in the brain and its membranes; or for the supervention of the latter upon the former, as is so often witnessed. The popular dread of the suppression of cutaneous eruptions giving rise to disease of internal organs, is founded upon the frequency with which metastasis is seen to occur in the diseases of children. We also find, in the mucous membranes especially, that when morbid action is once set up, it has a great tendency to spread rapidly along the whole of the affected tissue, unless promptly arrested by appropriate remedies. Thus, it is seldom that inflammations of the fauces and pharynx are not found to extend some distance into the œsophagus, or more unfortunately into the larynx and trachea; or that the false membranes exuded in croup do not reach to the bronchial tubes. The same remarkable occurrence takes place in the gastro-intestinal mucous membrane; all inflammations of which exhibit a strong tendency to spread downwards.

The *skin* being very vascular, delicate, and excitable, is rendered liable to irritating and unsightly—if not dangerous—disease of various kinds, from the simplest rash to the most violent inflammation; and from causes, too, which at a later period would produce no morbid effect. Many of the cutaneous affections of this period depend upon a morbid state of the stomach, some are owing to a neglect of cleanliness, others are the result of irritations directly applied to the surface, while the most important—the eruptive fevers—are due to morbid poisons. Most of the exanthematous fevers, but especially measles, are, as a rule, confined to the periods of infancy and childhood, and for the most part occur only once during life.

The *mucous membrane of the larynx, trachea, and bronchial tubes* is liable to inflammation of various grades, though generally of an acute character: thus laryngitis, pneumonia, and pleurisy are not unfrequent, while bronchitis and croup are perhaps, of all the severe affections of childhood, those which are most commonly met with.

The *gastro-intestinal mucous membrane* is another common seat of disease at the time of life we are considering; a slight excess of food, or food of an improper nature, or vicissitudes of temperature, or damp or vitiated air, readily producing aphthæ, sickness, purging, flatulence, colic, and even acute or chronic inflammation. Not uncommonly the inflammation extends to the mesenteric glands, or these become affected from constitutional causes rendering the blood unhealthy: enlargement and disorganization of these glands, with great distension of the abdomen, and extreme general emaciation then result, producing the disease known as tabes mesenterica.

Owing to the causes already mentioned, the circulation through the *brain* is readily deranged, and hence we have congestion, inflammation, hydrocephalus, and convulsions. Convulsive disorders arising from functional disturbance of the brain or spinal marrow are often the result of irritations transmitted from the digestive organs, and will only cease upon their removal. I have also known fatal convulsions or dangerous cerebral irritation excited by sudden alarm. Epilepsy and chorea occur during the latter periods of infancy and in childhood, rather than in the early months of life.

The early extreme development of the *lymphatic system* causes it readily to become the seat of disease; and we find consequently that enlargement and inflammation of the lymphatic glands is not uncommon, that strumous affections show themselves in all their various forms, and that tuberculous affections of the lungs, brain, and mesenteric and bronchial glands are rife. According to Sir Robert Carswell, tubercle in the brain is more frequent in young infants and children than at other periods of life, giving rise to acute hydrocephalus, with convulsions, paralysis, coma, &c. Infants have also been born with tubercular deposits in different organs of the body, especially in the lungs and brain, and occasionally—according to Lombard—in the pancreas.

Diseases of the *urinary organs* are neither frequent nor severe, though a disordered state of the urine, or an increased secretion of it, may arise from derangement of the digestive organs, or from the irritation of teething. Incontinence of urine—so often troublesome in childhood—may result from habit, or nervous irritability causing an augmented secretion, or irritations seated in the lower part of the intestines, or preternatural irritability of the mucous membrane of the bladder, or from want of due control over the vesical sphincters.

Most of the acute affections of infants and children—as well as the process of teething—are attended with more or less *fever*, which often assumes the remittent type, having exacerbations towards the evening or during the night. Young children may also suffer from *typhus* and *typhoid*, or from *intermittent fevers*, though it is certain that they are much less liable to these affections than adults; but, on the other hand, they are, as we have seen, very obnoxious to the *eruptive fevers.*

The diseases of infancy, then, present many interesting and remarkable features, the peculiarities decreasing as age advances. Thus, although cutaneous diseases are common during childhood, yet as the skin becomes less sensitive and irritable, so it also becomes less liable to suffer from slight causes; furunculi, however, or circumscribed phlegmonous inflammations of the skin are not uncommon up to puberty. So again, the mucous membranes readily suffer from inflammation during youth; while from the great development of the capillary system, and the tendency to hyperæmia and to irritation of the respiratory mucous membrane, there is a liability to hæmorrhages from the nose and lungs. Tubercular disease of the pulmonary organs is often developed during childhood; and scrofulous swellings and ulcerations of the superficial lymphatic glands are of common occurrence. Lastly, the brain, from the great activity of its functions is peculiarly exposed to disease as the child grows older; and hence severe headaches and general disturbance of the cerebral circulation are frequent.

The *direct causes of disease* are nearly the same during infancy and childhood, as in the subsequent periods of life, though it must be remembered that they act upon the child with much greater severity than upon the adult. Errors in diet, impure air, inattention to cleanliness, intense heat, cold and damp, improper clothing, exposure to the contagion of morbid poisons, excitement of the nervous system from alarm or paroxysms of anger, the irritation of dentition, and the presence of worms in the alimentary canal, together with accidents—as blows, falls, &c.—are all fertile sources of mischief to the young. Many of the disorders that occur in early life may exist at birth: thus children are occasionally born affected with syphilis, small-pox, tuberculosis, scrofula, softening of portions of the stomach and bowels, inflammation of the different organs, &c.; or they may be born convalescent—but very weak—from some disease that has assailed them during intra-uterine life; or there may exist from birth a peculiar condition of the organism, predisposing it subsequently, from the action of slight causes, to a particular form or class of diseases. This condition of organism may exist in all the children of certain families, and would appear, in many cases, to be hereditary—the same diseases prevailing, for many generations, in the same family.*

The *chief causes of death* in children under five years of age may be readily calculated from some valuable tables of fatal diseases, which are to be found in Mr. McCulloch's treatise.† This calculation shows that of 100,000 children born alive 9,112 die of zymotic diseases—such as small-pox, measles, scarlatina, hooping-cough, &c.—within the first five years of life; of convulsions, 4,631; of cephalitis and hydrocephalus, 3,242; of bronchitis, pleurisy, and pneumonia, 5,348; of tubercular consumption, 1,887; of mesenteric disease, 439; of teething, 1,554; of gastritis and enteritis, 863; while 338 are lost from violent deaths.

SECTION VI.—THE MEDICAL EXAMINATION OF INFANTS AND CHILDREN.

In no case, perhaps, does the practitioner so much stand in need of a certain indescribable tact, as in investigating the disorders of childhood; since it is absolutely necessary, to insure success in treatment, that an early and correct diagnosis should be made, while the means of making this diagnosis are in many respects totally different to those which are practised in the diseases of adults. In the first place, it is by no means easy to understand a helpless infant, for his only language is a language of signs, which nothing but habit, experience, and patience will enable us to interpret; and in the second place, a sick child is not only peevish and restless, but as medical men, we see him under strange and unusual circumstances, and hence part of his condition at the time of the examination may arise from our alarming, or exciting, or fatiguing him. As Dr. West justly says:—"You cannot question your patient, or if old enough to speak, still, through fear, or from comprehending you but imperfectly, he will probably give you an incorrect reply. You try to gather information from the expression of his countenance, but the child is fretful, and will not bear to be looked at; you endeavour to feel his pulse, he struggles in alarm; you try to auscultate his chest, and he breaks out into a violent fit of crying."*

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* Dr. D. F. Condie, *On the Diseases of Children*. Page 96. Philadelphia, 1844.

† *Opus cit.*, p. 622.

As in most critical positions, however, the difficulties are not insuperable: for by patience and good temper, by a quiet demeanour and a gentle voice, all may be made to go well, and we may accomplish everything that is desirable. One great point is to be careful not to alarm the patient, but on entering the room to be satisfied to gain quietly the previous history of the case from the mother or nurse; taking care to inquire especially into the character of former attacks of sickness, and whether any of the eruptive fevers have been passed through; the circumstances under which the present illness has come on; its early symptoms, and whether these appeared suddenly, or insidiously, or after exposure to contagion; the day of attack; and whether anything strange had been previously noticed in the child's manners or appearance. Having obtained information on these topics, we inquire the child's sex and age, the nature of its food, and whether it has been weaned, the state of the bowels, together with the nature of the evacuations, and how and to what extent it sleeps; while at the same time, without appearing to do so, we examine the expression of the eye and countenance, the attitude, and the character of the inspirations and expirations, &c. By this time the little sufferer will have become somewhat accustomed to our presence, and we may advance to the bedside to examine it more closely. We shall now be able to ascertain if any inflammation exists about the eyes or nostrils, the temperature of the surface, whether the body is plump or wasted, and the condition of the skin with regard to dryness, colour, and the presence of any rash or eruption; while by gently applying the index finger over the back of the radial artery without grasping the child's arm, or by feeling the temporal artery, we may learn the nature and frequency of the pulse. The state of the scalp and fontanelles, the presence or absence of abdominal pain or tenderness on pressure, the existence of any hernia, the position of the limbs—whether motionless or tossed about, rigid or relaxed, whether the hands are clenched, the thumb turned in, or the toes bent downwards—may now be ascertained; and by a little management auscultation may be quietly had recourse to.

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* *Lectures on the Diseases of Infancy and Childhood.* 3rd ed., p. 2. London, 1854.

In practising auscultation, it is worthy of remembrance that immediate is generally to be preferred to mediate auscultation in these cases, since the pressure of the stethoscope frightens, if it does not hurt the child. In employing percussion, care must be taken not to strike too smartly, the variations in resonance being more readily appreciated by a gentle stroke; while it is almost unnecessary to add that mediate percussion must be used, that is to say, the blow must fall on the finger or on an ivory pleximeter, and not on the chest walls.

To examine the throat, when deemed necessary, some such manœuvre as that adopted by the celebrated Gölis must be tried. While playing with the infant, pass the little finger between its jaws as far as the base of the tongue: an effort will be made as if to vomit, during which—having previously taken a proper position as regards the light—the physician may seize the opportunity of making the inspection.

Lastly, the state of the tongue, the condition of the gums, and the number of the teeth, if any, remain to be ascertained; it being generally better to defer this to the last, since, as Dr. West teaches, it is usually the most grievous part of the medical visit.

It only remains, before leaving the room, to examine the urine, if it can be obtained; the matters vomited, if any; and the evacuations from the bowels: and the practitioner will then be in possession of all the materials necessary for forming his diagnosis. The value and import of the symptoms he has observed will be treated of in the next chapter.

CHAPTER II.

THE DIAGNOSIS AND PROGNOSIS OF INFANTILE DISEASES.

SECTION I.—INTRODUCTION.

IT is not unfrequently asserted, in the way of reproach, that the profession of medicine is merely a conjectural art; and practitioners are reminded how certain of their predecessors have rejoiced at being able to retire from a harassing life, because they were weary of guessing. Allowing that the observation contains a certain modicum of truth, it is, nevertheless, quite clear that there must be a vast distinction between the conjecture of the scientific physician and that of the rash and ignorant empiric: for whereas the one either surmises by rule and by a slow process of reasoning for each step of which he can show the why and the wherefore, or by a ready perception acquired only by extensive practice and study, so the other merely makes a haphazard guess which—to say the least—is as likely to be incorrect as correct. Moreover, it may certainly be asserted that with regard to the diagnosis of disease in the present day, guess-work no longer prevails; inasmuch as we have the stethoscope, microscope, and test-tube to aid the educated senses, and often alone to afford us the most trustworthy information. So, again, the knowledge which we now possess of the minute structure and functions of the various organs and tissues of the body, gives us immense advantages in rectifying morbid processes when they occur. As Bacon says:—"This variable composition of man's body hath made it an instrument easy to distemper, and therefore the poets did well to conjoin music and medicine in Apollo, because the office of medicine is but to tune this curious harp of man's body, and to reduce it to harmony."* But not only are we intimately acquainted with the nature of the instrument we have to keep in order, but we also study—more closely than our ancestors did—disease at the bed-side; and hence we are daily becoming better acquainted with the natural history—so to speak—of the latter, while we are also learning the true value of remedies.

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* *Advancement of Learning.* Vol. i., p. 42. Bohn's edition. London, 1846.

In the following observations the reader must not expect to find more than certain general truths, derived from a scrupulous and comprehensive survey of disease, briefly expressed; since the extent of my subject renders it imperative that my remarks be confined to succinct assertions, where, probably, vivid illustrations would be more easily impressed upon the mind.

The chief sources from which we derive materials for the formation of our diagnosis and prognosis in the diseases of children, are—the countenance, the gestures and attitude, the sleep, the cry, the mouth and breath, the general surface and temperature, the respiration, the circulation, and the discharges by vomiting and stool. Before examining these seriatim I would briefly offer the following suggestions:— 1. Epidemics vary much in their intensity, being occasionally very mild, and at other times severe. Hence, before forming a prognosis in the case of any zymotic disease, the character of the prevailing epidemic must be taken into consideration. 2. Diseases of the nervous system are very fatal to children, hydrocephalus being especially dangerous, and trismus nascentium generally fatal. 3. A very guarded opinion should be given in those affections which are due to any hereditary predisposition, as well as in diseases occurring in scrofulous children, and in those disposed to tuberculosis. 4. The symptoms are often masked or complicated by the improper administration of purgatives or of soothing poisons. Some silly mothers, and many bad nurses, are fond of amateur doctoring; while, when they see the resulting mischief, they are not always disposed to confess their delinquencies. 5. Some hours before death a total remission of the symptoms not unfrequently occurs, especially in the cerebral diseases of children; consciousness being restored, and the countenance becoming brighter and more natural. The practitioner who mistakes this change, and gives a favourable opinion from it, will not be likely to increase his reputation. 6. Beware of giving up all hope in any instance, without great caution; for not only do young children often rally from the most severe disorders, but the attendants, regarding the case as hopeless, will cease to administer the remedies, or—as they occasionally say—" to worry the poor dear."

SECTION II.—THE COUNTENANCE.

The infant's countenance offers to us one of the most interesting and intelligible pages in the book of Nature. In its calm we read the health and ease of all the organs and functions: in its smile, happiness of body and mind. In its expressions of uneasiness or pain, we first discover the invasion of disorder or disease. Our attention will probably be first attracted by some undefined change, which it will require a stricter observation to decipher and associate with its peculiar cause.*

Four principal indications—speaking roughly—are presented by the physiognomy. 1. In general uneasiness, excitement, and fever, the whole expression of the countenance is altered: a flushed and heated condition, with occasional wrinkling of the features, being chiefly remarkable. 2. In affections of the brain and nervous system, the expression of the upper portion of the face—as the forehead, brows, and eyes—is especially changed; the forehead being contracted and heavy, the brows knit, and the eyes wild and vacant, or fixed and staring. 3. Morbid conditions of the organs of respiration or circulation affect the features of the middle of the face, the nostrils being rendered sharp and distended, while a dark circle surrounds the mouth and eyes. 4. In diseases of the abdominal viscera a peculiar expression is given to the cheeks, mouth, and lips: the cheeks appearing sallow and sunken, the mouth retracted or drawn, and the lips colourless or brown.

In acute affections of the brain or meninges, the face is generally flushed, turgid, and hot, or the colour is intermittent—the redness being fugitive and followed by pallor;

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* Dr. Underwood's *Treatise on the Diseases of Children*. 10th ed., p. 106. London, 1846.

the eyes are vacant or staring, or the upper eyelid cannot be raised, and the eye is half open, or there may be strabismus in the early stage the pupil is contracted, but becomes dilated as the disease advances; the upper lip is drawn firmly over the gums, and is of a livid hue; and, at times, there are convulsions of all the features. The deformity produced by hydrocephalus can hardly be mistaken, the disproportion between the size of the cranium and face, with the raised and bulging forehead, at once attracting attention.

Diseases of the organs of respiration, as laryngitis, bronchitis, or pneumonia, produce a dusky-red, swollen appearance of the features; wide dilatation of the nostrils during each inspiration, and strong contraction with each expiration; knitting of the eyebrows; and lividity of the lips, which, moreover, are widely opened to facilitate respiration if the breathing be much oppressed. Should the disease assume a chronic form, the features will become emaciated, and present an appearance of decrepitude.

The expression of countenance produced by disorders of the abdomen is mostly characteristic; it being difficult to mistake the cause of the peculiar peevish or fretful look, sharp features, sunken eyes, pallor, and dark colour of the lips and skin surrounding the mouth. In severe forms of gastro-intestinal inflammation the face rapidly becomes sallow and emaciated; the lips are stretched firmly over the gums, and are pale, dry, and cracked; the chin seems to project unusually; and the nose looks swollen. In chronic irritations of the bowels from worms the nose and upper lip are often tumid, and the conjunctiva is said to look pearl-like. In weakness and exhaustion from diarrhœa, or from loss of blood, &c., the face is alternately flushed and pale, hot and cold: while, in very extreme cases, the cheeks are pallid, cold, and glistening; the eyelids are half closed; the corneæ covered with films of mucus; and the pupils are contracted.

It only remains to remark that the countenance is of a yellow hue in icterus or jaundice; livid, when the blood is improperly aërated; and of a deep blue or purple in morbus cæruleus, in which affection a malformation of the heart allows of an admixture of the venous with the arterial blood.

The lachrymation, redness of the eyes, and swelling of the eyelids, which precede the eruption of measles, will not be forgotten by one who has witnessed these premonitory symptoms; and the same statement applies to the brilliancy of the iris and extreme contraction of the pupil caused in the child by a small dose of opium.

SECTION III.—THE GESTURES AND ATTITUDE.

In infants old enough to be playful and easily amused when awake, the commencement of disease is frequently signalized by their ceasing to be attracted by surrounding objects, by their listlessness and dislike to any movement, and by the difficulty experienced in exciting their smiles or that peculiar cooing sound by which they express their satisfaction or delight when well. As indisposition creeps on, the infant begins to give evidence of its uneasiness by frequent startings and general restlessness: supposing that it has begun to support itself—to hold up its head—its suddenly ceasing to do so, at the same time that it assumes the posture and movements of extreme languor, is clearly indicative of that muscular debility which so commonly precedes an attack of acute disease. If a child has arrived at the age of fifteen or eighteen months without being able to hold itself upright, we shall probably find it suffering from rachitis, as indicated by deformity of the thorax, incurvation of the spine, and weakness of the lower extremities. The pain of inflammatory affections often causes the infant to avoid all movement, or, in inflammation of any part of a limb, all motion of the affected member; so in severe abdominal irritation or inflammation the child lies quiet, with the knees bent and drawn upwards, twisting about, however, and uttering loud cries on the sudden accession of pain. An acute spasmodic pain induces immediate contraction of the whole of the muscles, and the infant starts in terror and surprise. In convulsions the head is drawn backwards, or one arm becomes rigid, or a leg is drawn upwards, and the child cries violently from pain and fear: at the same time the breathing may appear spasmodically affected, and it may be observed that the thumbs and fingers are drawn into the palms of the hands, while the toes are firmly flexed downwards. In great prostration from any cause the child lies motionless, or one side of its body may be paralysed.

There are a few particular gestures which point at once to the seat of the disease: "as the tongue speaketh to the ear, so the gesture speaketh to the eye." Thus, in inflammation of the brain or its membranes, the hand is frequently raised to the head, attempts are made to tear off the cap, and a quick movement, as of striking the air, is performed, while the head is rolled from side to side as it lies on the pillow: in disorders of the tongue or fauces, and during dentition, the child presses its fingers into the mouth, or seizes the nipple roughly and greedily, or rubs the gums with anything it can get hold of: in croup and other diseases producing difficulty of breathing it pulls at its larynx, tries to compress it laterally, and by its urgent cries till placed in a sitting posture indicates the seat of suffering and its painful effect: while, in great prostration from any cause, the hand wanders automatically over the bed, plucking at the counterpane, &c. Lastly, there are the convulsive movements of the muscles of the face so common during dentition, or when any irritation of the digestive canal exists: and the involuntary and tumultuous movements which betray chorea in the more advanced child. These, however, need no description.

SECTION IV.—THE SLEEP.

The sleep of the healthy infant is tranquil, deep, and prolonged, its countenance at the time being calm and happy, its breathing slow and occasionally interrupted by deep inspirations or sighs, and its limbs relaxed; on awaking it is lively, and seeks the breast. In disease, on the contrary, the rest is disturbed and broken, the respiration is loud and laboured, the brow is contracted or the mouth is drawn, there is grinding of the teeth or gums, sudden startings occur, and the child awakes either fretful and peevish, or—if frightened—to cry and scream.

For the first few weeks after birth infants pass much of their time in sleep, during which the skin is moist and the digestion energetic. As the system is slightly enfeebled during sleep, and the power of maintaining the animal heat lessened, care must be taken to shield them from draughts, cold, &c. Any irritation in the bowels or in the brain, or slight degrees of uneasiness or pain, lessen the ability to rest: there is also very frequently troublesome sleeplessness during convalescence from acute disorders. On the other hand, a great deal of somnolency is often produced by overloading the stomach, by serious cerebral disease, and sometimes by dentition. A strong indication of a tendency to convulsive disorders is evidenced by a rigid extension of the limbs, with a turning inwards of the great toes and thumbs during sleep.

SECTION V.—THE CRY.

The first indication which the infant gives of life is to cry, and the more loudly and freely that it does so the better; since it proves that the most important of the vital organs are well formed, and that the child is not deficient in health and vigour. After the first few hours of existence, however, the properly-nursed healthy infant cries but little; the act of crying being, as it were, reserved to express pain, distress, or hunger. Violent paroxysms of crying are generally produced by great pain; and when prolonged become injurious, causing congestion of the brain, and sometimes convulsions. In affections of the lungs—especially pneumonia—the cry is said to be laborious, or smothered, *i. e.*, it is rather a groan than a cry: in croup it is hoarse and muffled, and attended by a peculiar ringing sound, or crowing inspiration: in œdematous angina—according to Billard—it is tremulous: in acute cerebral diseases there is sometimes a single, sharp, powerful cry, occurring at rather distant intervals, and which has been termed the hydrocephalic cry: and lastly, in most diseases of the stomach and intestinal tube the cry is prolonged and acute, or low and moaning if they have produced much exhaustion.

In young children the cries are often accompanied by an abundant secretion of tears, but this is not the case with infants until about the third or fourth month; since the functions of the lachrymal gland are not brought into play until this time.

Hence, when no tears are shed, we must consider whether this be due to the age of the little patient or to the functions of the lachrymal gland having been suspended by acute disease. M. Trousseau lays it down as an aphorism, as little liable to exception as any aphorism of Hippocrates, that when a child sheds tears a favourable prognosis may be delivered, however menacing the symptoms; while, on the contrary, when this is not the case in painful diseases, and especially if the eyes are dry and sunken in the orbits, great danger to life exists. The observation applies almost invariably to children under two years of age, and particularly to those less than one, but may frequently be verified even until seven.*

SECTION VI.—THE MOUTH AND BREATH.

In health, the mouth is moist and pale, the tongue smooth and partially covered with a layer of whitish mucus, the gums red, and the breath free from smell or having only the odour of the mother's milk.

These conditions are altered by slight causes: the mouth then becomes hot, red, and dry; the tongue loaded with a white, curdy matter; and the breath hot, sour, or acid. This is especially the case in fevers, in acute affections of any of the important viscera, in diseases of the alimentary canal, and in painful dentition.

In severe cases of small-pox, scarlatina, measles, laryngitis, and croup, the tongue often swells, and becomes covered with a dark-brown fur. In scarlatina, the tongue is loaded with a thick white fur, through which enlarged and prominent papillæ project; but, as the fur clears away, it becomes clean and preternaturally red, and of a strawberry appearance. Aphthæ of the mouth, throat, and tongue, are common in infants; they may be due to improper food, to impure air, to the irritation of dentition, or to more serious causes. The breath may be rendered fœtid by most attacks of fever and by indigestion; it becomes positively foul only in gangrene of the gums or cheek, in gangrene of the lungs, or in severe ulcerations about the nose or throat.

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* *Gazette des Hôpitaux.* No. 14. Paris, 1848.

SECTION VII.—THE GENERAL SURFACE AND TEMPERATURE.

In the healthy infant, the skin should be firm, elastic, and smooth, of a rosy-flesh colour—neither too red nor too pale—moist and cool, and uniformly distended by soft subcutaneous areolar tissue and fat. Whenever it becomes hot and dry, or pale and flabby, or intensely red or yellow, we may be sure all is not right: moreover, the slightest eruption should attract attention, and, if it be contagious, the parents should be warned.

A hot, harsh, dry skin is common to all febrile and acute diseases; a cold, moist one to constitutional feebleness, or to sclerema, or to disorders producing great prostration: increased redness is an indication of inflammation, or warns us to look for one of the eruptive fevers: a pale, doughy, or puffy condition, with emaciation, bids us take defensive measures against scrofula and tuberculosis: intense blueness may arise from any cause interfering with the oxygenation of the blood, or from cyanosis: yellowness, from some affection of the liver: while a dirty, sallow hue may be produced by diarrhœa, or any protracted disease of the abdominal viscera.

The "tache meningitique, ou tache cerebrale," has been pointed out by M. Trousseau as a red mark or stain, easily produced by pressure upon the skin of hydrocephalic children. This mark is most readily made upon the face, neck, or chest; and though most common in cases of hydrocephalus, yet it has also been observed in congestion of the brain, pneumonia, &c. Dr. Baines suggests that it is due to some altered relation between the supply of nervous power to the capillaries and the circulation, allowing of a ready dilatation of the superficial vessels when any irritation is applied to the skin.*

The temperature of the body often furnishes indications of disease, though it must be remembered that the heat proper to young children varies as much as their constitution, vital powers, &c. Speaking generally, however, it may be said that the normal temperature varies from 88° to 96° Fah.: and that when it is above 100° Fah., fever may be considered as existing; and when below 88°, some exhausting disease, as sclerema—hence termed by M. Roger, *algide œdema*. According to M. Roger, pneumonia and typhus fever are the diseases attended with the greatest rise of temperature. Thus, if the pulse and respiration be quickened, and the temperature raised to 106°, inflammation of the lungs may be diagnosed; while the same degree of heat, with a moderate pulse, is peculiar to typhus. In peritonitis or enteritis the temperature is said seldom to reach 104°.

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* *Medical Times and Gazette.* London, 6 December, 1856.

Rigors do not occur in young children, not even when suffering from intermittent fevers. M. Bouchut states that he has observed the commencement of an attack of intermittent fever in several children under two years of age, and not one experienced shivering; the cold stage being only outwardly betrayed by a considerable paleness of the face, decoloration of the lips, and a manifest bluish tint beneath the nails.*

SECTION VIII.—THE RESPIRATION.

The new-born infant breathes instinctively, without method or regularity: when about two years of age, the respirations become more regular. The younger the child, the less the chest dilates during inspiration, and the more freely do the muscles of the abdominal wall and the diaphragm act; hence the respiration is said to be abdominal. The respiration is most tranquil during sleep, is repeated twenty to thirty times a minute, and the movements of inspiration and expiration succeed each other without effort. On awaking, the breathing is altered; for a time being calm and easy, then intermittent and hurried, and again free and tranquil.

The chests of children at the breast are but slightly resonant on percussion: on auscultation, the respiratory bruit is heard, hard and feeble, owing probably to the incomplete dilatation of the air-cells. After this period, as the rarefaction of the pulmonary tissue becomes greater, the resonance increases; while the respiratory murmur becomes sonorous and roaring—puerile respiration.

All diseases of the glottis, larynx, and trachea are attended with difficult and noisy respiration; they are also accompanied with cough, which is hoarse and spasmodic in inflammation of the glottis, ringing in laryngitis, and crowing in croup.

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* *The Diseases of Children.* Dr. P. H. Bird's Translation, p. 121. London, 1854.

In bronchitis, pleurisy, and commencing pneumonia, the breathing is merely hurried, the cough hacking and dry, and unaccompanied with expectoration: as the severity of the inflammation increases, however, the rapidity of the breathing becomes augmented, so that, in confirmed pneumonia, the respiration may be termed *panting*, from sixty to eighty inspirations being made in the minute. At the same time there is rapid dilatation and contraction of the nostrils, violent moist cough, and copious expectoration; the matters expectorated being generally swallowed, so that we are unable to aid the diagnosis by their examination. When the pain in pleurisy is acute the respiration has the peculiar character of being *restrained*, *i. e.*, it is suddenly stopped at each effort by a kind of convulsive spasm. In peritonitis, also, the inspirations are short, jerking, and difficult, owing to the pain to which all movement of the abdominal muscles gives rise.

As regards the value of auscultation in the pulmonary affections of children, I need only here mention that in many cases it is useless; while in all, much less reliance must be placed upon the signs derived from its practice than in the diseases of the adult.

SECTION IX.—THE CIRCULATION.

Authors who have paid attention to the frequency of the pulse in children at the breast have not all arrived at the same conclusions. Thus, Haller fixes the number of beats at 140 a minute; Sœmmering, at 130 or 140 the first year, 120 the second, and 110 the third; Billard observed a minimum of 80, and a maximum of 180, in thirty-nine infants from one to ten days old; while M. Trousseau found a minimum of 96, and a maximum of 152, in children of from fifteen to thirty days.

From a careful examination, however, of much that has been written upon this subject, I think I am justified in deducing the following observations:—

1. In young infants, no signs can be deduced from the fulness or hardness, the strength or weakness of the pulse, since generally these distinctions cannot even be recognised.
2. The pulsations are often irregular, without any disease being present.
3. They are very frequent, the normal quickness varying from 110 to 150 a minute; the mean number being 130.
4. They diminish gradually as the period of weaning approaches, continuing to do so until adult age, when they are about 75.
5. Sex has no influence until the age of seven years, after which the female pulse becomes slightly quicker than that of the male.
6. Sleep lowers the frequency by about eighteen or twenty beats per minute.

In estimating the value of the indications derived from the pulse it must be remembered that the heart's action is more variable in infancy than at any other period of existence, and that moral impressions quicken the pulsations as much as fever or inflammatory disease.

SECTION X.—DISCHARGES BY VOMITING AND STOOL.

Infants frequently vomit from mere repletion, a greater quantity of milk having been sucked than the stomach can digest. In such cases the milk is brought up unchanged, or partly coagulated.

Any disturbance of the process of digestion will induce sickness. Repeated vomiting, however, shows that the cause is more than temporary, and should be sought for. It may be due to improper food, to disease of the stomach or intestines, or to disease of the brain. Some of the eruptive fevers—especially scarlatina—are ushered in by vomiting; so is infantile cholera. The paroxysms of hooping-cough are frequently terminated by a fit of vomiting. As children usually swallow matters expectorated from the bronchial tubes, these expectorations are often ejected with the contents of the stomach.

During the whole period of infancy and childhood the evacuations from the bowels are more frequent than in after life. Diarrhœa, however, is readily induced by any excess in the quantity of the nourishment, or by improper food, or by any irritation or inflammation of the alimentary canal, or by the irritation of dentition.

The first stools after birth—the meconium—are of a dark-green or black colour, very viscid, and have an odour resembling that of the perspiration. Subsequently they become of a light-brown or yellow hue, of a curdy consistence, and free from odour. Frothy, acid evacuations, of a pale-green colour, indicate some disturbance of digestion: discharges of slimy mucus are common during dentition, or when worms are present in the intestines: thin, fœtid, dark-brown stools signalize chronic diarrhœa: and, lastly, a dark-green colour of the discharges generally indicates serious disease of the stomach or intestines.

Constipation is not common in infancy. It may arise from the quality of the mother's milk, from the exhibition of soothing syrups containing opium, or from some derangement of the liver preventing the free secretion of bile.

SECTION XI.—THE URINE.

The examination of the renal secretion not only affords but little information in the diagnosis of the disorders of the period of life under consideration, but it is obtained with such difficulty that nurses are seldom able to show a specimen. Hence it is only necessary to mention that, in all febrile affections, it is scanty, high-coloured, of high specific gravity, usually very acid, and often deposits a sediment; in intestinal irritation from worms, &c., and in cerebral disturbance, it is white and thick, and sometimes loaded with phosphates; in indigestion, and during dentition, it may be pale, limpid, and abundant; while after scarlatina—on the supervention of acute desquamative nephritis—it may become scanty, of a dark smoky colour, and loaded with albumen.

CHAPTER III.

INFANTILE THERAPEUTICS.

SECTION I.—GENERAL REMARKS.

THE great aim and object of the physician being the relief of pain and suffering and the cure of disease, too much attention can hardly be paid to the nature and properties of the various agents with which he has to work. To form a correct estimate of many classes of medicines, however, is by no means an easy task; since in addition to the well-known fact that several worthless articles still encumber our materia medica, it is also undeniable that well-founded doubts are beginning to be entertained concerning the value of certain particular drugs which during many years have been deemed absolutely necessary for the relief of peculiar morbid conditions. For example, few practitioners even in the present day would think of treating pericarditis or iritis without mercury; yet more than ten years have elapsed since Dr. John Taylor's valuable contributions to clinical medicine were published, in which it was clearly shown that the opinions then current on this subject required revision.* Thus of the several instances of disease on which this excellent physician founded his observations, four got well without any treatment; in twelve, ptyalism was not followed by any abatement of the pericarditis; in six, ptyalism was followed by pericarditis; in three by endocarditis; in two, by extensive pleurisy; in four, by pneumonia; in one, by erysipelas and laryngitis; in one, the pericarditis and pneumonia both increased in extent after ptyalism; while in only one instance was salivation followed speedily by relief, and in two or three by a gradual diminution. Again, Mr. Dixon asserts that in syphilitic iritis our chief reliance must be placed upon mercury; though he adds that the best cures are effected where the gums are not made tender in the slightest degree.† Yet a great authority, Dr. Mackenzie, tells us that in syphilitic inflammation of the iris the constitution must be thoroughly mercurialized, and the gums made distinctly sore, since he has known many cases in which little effect was produced until pretty profuse salivation was established;* while Dr. Pereira states—speaking of the effects of this metal generally—that without salivation the curative influence is not usually observed.† These contradictory statements on really essential points lead naturally to the supposition that mercury may not be necessary at all in the treatment of iritis, and prepare us to learn, without surprise, that Dr. Henry W. Williams has cured sixty-four cases (of every degree of severity, including its idiopathic, traumatic, rheumatic, and syphilitic varieties) without a dose of this agent; the treatment having chiefly consisted in sustaining the general system, in relieving pain by narcotics, and in keeping the pupil dilated by belladonna.‡

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* *Lancet*, from 17 May, 1845 to 31 October, 1846.

† *The Practical Study of Diseases of the Eye*, p. 137. London, 1855.

Owing to this want of correct knowledge as to the properties and *modus operandi* of particular medicines, as well as on account of the extreme susceptibility of the young to most drugs, we must not only exercise great caution in prescribing, but must also closely watch the results produced. The following rules may be advantageously borne in mind:—1. That many of the diseases of early life may be arrested by very simple treatment, if promptly applied. 2. That drugs are frequently unnecessary, for articles of diet may often be made to serve as medicines. Moreover, drugs sometimes do great harm, *e. g.*, purgatives in intestinal obstructions; hence the practitioner should learn when to abstain from ordering physic. 3. That a marked disposition exists in infants and children to be affected by medicines, especially by those which exert their influence on the nervous system, as by narcotics and irritating stimulants. 4. Those remedies only should be employed, the composition, effects, and modes of action of which are best known; while of those which are suitable, the least irritating and the most simple are to be chosen. 5. Remember that the bulk of the remedy should be small, as the medicine must be given in the form of a liquid or powder. And 6. Make the dose as palatable as possible, not only from motives of kindness, but especially because the forcible administration of nauseous physic to the young often does great harm.

* *Diseases of the Eye.* 4th ed., p. 547. London, 1854.

† *Elements of Materia Medica.* 3rd ed. Vol. i., p. 824. London, 1849.

‡ *The Boston Medical and Surgical Journal.* Vol. lv., pp. 49, 69, 92. 1856.

In addition to attending to these points, the practitioner will not fail to pay due regard to the mode of accession, supposed cause, and the duration of the symptoms; to the general aspect, nutrition, vital power, and constitution of the little patient; to the conditions—air, temperature, &c.—by which the child is surrounded; and to the nature of the diseases prevalent at the time. Moreover, while subsequently watching the progress of the disorder, he should be careful not to attribute too much of the improvement to the action of the remedy; for it may not have been administered, or its active ingredients may be so adulterated as to be useless, or it may not have been absorbed into the system, or the result may be due to the vis medicatrix naturæ.

No rule that will be applicable under all circumstances can be laid down as to the exact *dose* of a medicine which a child will require, compared with an adult. Still, although the proportion cannot be stated with arithmetical precision, we can form some general opinion on the subject, and the following table—a translation of that contained in the Pharmacopœia of Guy's Hospital—though not to be implicitly followed, may serve as a valuable guide :—

Age.	Maximum Dose.		
	One Ounce—℥j.	One Drachm—ʒj.	One Scruple—℈j.
1 Month . .	ʒ ss.	gr. iij.	gr. j.
3 ,, . .	ʒ ss.	iv.	j.
6 ,, . .	℈ ij.	vj.	ij.
9 ,, . .	℈ ij.	vij.	ij.
1 Year . . .	ʒ j.	viij.	iij.
2 ,, . . .	ʒ iss.	x.	iv.
3 ,, . . .	ʒ iss.	xij.	iv.
4 ,, . . .	ʒ ij.	xv.	v.
5 ,, . . .	ʒ iiss.	xviij.	vj.
6 ,, . . .	ʒ iij.	xx.	vij.
7 ,, . . .	ʒ iiiss.	xxv.	viij.
8 ,, . . .	℥ ss.	ʒ ss.	℈ ss.
10 ,, . . .	ʒ ivss.	gr. xxxv.	gr. xij.
12 ,, . . .	ʒ v.	xl.	xiv.
13 ,, . . .	ʒ vss.	xl.	xv.
15 ,, . . .	ʒ vj.	xlv.	xvj.
18 ,, . . .	ʒ viss.	xlv.	xvij.
20 ,, . . .	ʒ vij.	l.	xviij.
21 ,, . . .	℥j.	ʒ j.	℈ j.

Lastly, the infant during its illness must be supported by *suitable nourishment*, given at short intervals. Should the breast milk be found too stimulating—as it has sometimes been said to be during fevers and some inflammatory diseases—it must be diluted with water, or exchanged for thin gruel, arrowroot, or barley-water. On the contrary, in disorders of a lowering nature, and in convalescence from acute affections, more nourishing food than usual may be wanted; and I have frequently seen the best results ensue from giving beef-tea, or the yolk of an egg beaten up in milk, or even from a small quantity of port wine well diluted. *Diluents* and *refrigerants*, as water or slops containing a small quantity of nutriment, should be freely allowed in febrile disorders, and in most cases when the child eagerly desires cold drinks; they diminish the specific gravity of the blood, distend the blood corpuscles (Hewson), augment the secretion of the kidneys, and promote exhalation by the skin and lungs. On the contrary, we withhold these fluids when it is necessary to increase the specific gravity of the liquor sanguinis, as in aneurism, when we wish to promote the coagulation of the blood; in diabetes, when it is desirable to repress excessive secretion; and in affections characterised by a watery condition of the blood (*spanæmia*, Simon), as anæmia, morbus Brightii, &c.

SECTION II.—CHANGE OF AIR.

No practitioner in the present day will expect to cure disease in a close, over-crowded, or ill-ventilated apartment, since he knows that he will be looking for an impossibility. Fresh cool air is of itself a medicine; and we must take care that it is freely supplied to the sick child, whose room should seldom be heated beyond 65° Fah.

Independently, however, of a pure atmosphere, we have a valuable remedy in *change of air;* protracted cases of infantile disease being frequently benefited even by mere removal from one room to another. This is especially true in fevers, chest affections, and abdominal diseases; while in affections of the head the good to be derived is more doubtful, always supposing that the room already occupied is quiet, free from damp, and well ventilated.

One of the best remedies, perhaps, which we possess for diseases in which debility is the chief and fundamental character, is *sea-air*. This can hardly be wondered at when we compare the atmosphere of large towns with the pure invigorating air of the sea. Dr. Glover is of opinion that the latter, besides containing minute quantities of chlorine, bromine, and iodine, has also in its composition more oxygen and ozone than the air of inland districts.[*] Scrofulous children who remain unbenefited by all the drugs in the Pharmacopœia, improve surprisingly from a residence on the coast; and the same takes place in pale, irritable children, who, without being positively ill, are always languid and pining.

In children between three and four years of age, and particularly between five and seven, threatened with hydrocephalus or mesenteric disease, or disposed to glandular enlargements, or to membranous inflammations—bronchitis, croup, gastric and intestinal irritation, &c.—Dr. Evanson recommends removal for the winter months to the genial climates of the *South of France* or *Italy*; having himself seen such children pass the whole winter in those countries without one day's illness, whereas previously they had seldom been out of the sick-room. "The places on the Continent best suited as winter residences for children are Nice or Rome, but in the commencement of the season, Naples is equally eligible; and for those with whom a soft, but rather moist atmosphere is calculated to agree, Pau is a convenient place to select."[†] For feeble, delicate, and strumous children, the dry, invigorating air of Nice is the best; for such as are liable to acute inflammatory attacks, or to bronchial affections of a dry irritating kind, or who have an excitable nervous system, the mild, soft, relaxing climate of Rome is to be preferred. In either case, a residence should be selected in a good quarter of the town, and the aspect of the rooms should be southerly.

SECTION III.—BATHS.

1. The Warm Bath may often be employed with great advantage in the diseases of infants and children; for it will soothe irritation, subdue pain, lessen fever, promote perspira-

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[*] *On Mineral Waters*, p. 36. London, 1857.

[†] Maunsell and Evanson, *On the Diseases of Children*, p. 114. 5th ed. Dublin, 1847.

tion, and induce sleep. The water should not be very hot, 95° Fah. is a good temperature: about sixteen gallons will be required for an infant, thirty for a child three years old, and forty at seven. The child should remain in the bath, with the water up to the chin, from five to fifteen minutes, according to its age; and should be quickly and carefully dried on being taken out, and then put to bed. The forms of disease in which warm bathing is required are infantile convulsions, chronic cutaneous disorders, eruptive fevers in which the eruption is slow to come out or has receded, dropsy following scarlet fever, chronic inflammatory affections, infantile cholera, and some cases of continued fever. Immersion of the feet and legs in hot water, while ice or cold water is applied to the top of the head, often does good in inflammatory affections of the brain and its membranes, and in convulsions. "In abdominal affections of a chronic character, as peritonitis, enteritis, protracted diarrhœa, &c., &c., we have seen," says Dr. Evanson, "the best effects from leaving children for hours together in a tepid bath, the temperature of which, as well as the time for remaining in, being regulated by the feelings of the patient. This practice is an imitation of the method so successfully pursued with some mineral baths on the Continent, and from which we have witnessed the happiest results. Warm bathing is similarly recommended in chronic pulmonary affections, particularly pneumonia, and its benefits are highly spoken of by some German writers, as Siefert, Horn, &c.[*] The bath is to be used frequently in the day (at least twice); the temperature of the water varying from 95° to 98°, that of the apartment not being below 65°; and the child is to be left in the bath as long as possible. The practice is doubtless worthy of imitation, but we have ourselves seen so much mischief done by the abuse of hot baths in pulmonary inflammations, that we confess to feeling some prejudice on the subject."[†] The warm bath will often, also, act beneficially as a cooling agent, in fever, pneumonia, &c.,

[*] "Many children," says Horn, who has had most extensive opportunities for observation, "whose cases seemed hopeless, have been indebted to this means for their life."—*Ueber die Erkentniss und Heilung der Pneumonie.*

[†] *Opus cit.*, p. 160.

when the temperature of the body is higher than that of the water employed. A moment's consideration shows that this must be the case; since, as water is a good conductor of heat, it follows, that if the bath has a temperature of 96° and the patient's body is of 104° or 106°, the latter must, on being immersed, rapidly part with heat to the former.

2. THE VAPOUR BATH.—The effects of this bath are very similar to those of the hot-water bath, except, perhaps, that it is more derivative to the surface, more diaphoretic, and rather more lowering. It may be employed in chronic, scaly, cutaneous affections; in rheumatism; and especially in that fatal disease of new-born children—sclerema, or induration of the skin and areolar tissue. In the latter case it must be promptly resorted to; and its application should be repeated every six or eight hours, until the skin becomes moist and soft, and until the tightness and hardness have disappeared. The heat of the vapour should be between 98° and 100°, and not above 105°.

3. MEDICATED BATHS consist of water impregnated with various substances, and are valuable and powerful therapeutic agents. In using them care must be taken that none of the water gets into the child's eyes, as severe irritation would often be caused.—The *warm artificial salt-water* bath is a useful means of stimulating the functions of the skin, and imparting tone and vigour to the system: hence it is employed in glandular enlargements, in the strumous diathesis where the cutaneous circulation is languid, and in some chronic skin diseases. It is made by adding—according as the age varies from one to seven—from half a pound to two pounds of common salt to the water at a temperature of 90° or 92°: it should be used once a day for twenty minutes. *Alkaline* baths stimulate the skin, promote the functions of absorption and secretion, and relieve spasm and convulsion. For infants and young children they may be made by adding from a quarter to half a pound of soft-soap to the water; but for children above six years of age, and in cases where we wish to make a more powerful impression on the nervous system, from half an ounce to six drachms of the carbonate of soda or potash, to each gallon of water will be required. *Sulphureous* baths—

made by adding half a drachm of sulphuret of potassium to each gallon of water—are more powerfully stimulant and alterative than the preceding. Hence they are mostly used in obstinate skin diseases, as psoriasis and lepra; in scabies, when it is extensive; and in some nervous diseases, as chorea. In some forms of scrofula *Iodine* baths, repeated two or three times a week, are said to be valuable: they may be prepared in a wooden tub, by adding from eight to ten grains of iodine, and twenty to thirty grains of iodide of potassium—according to the age—to each gallon of water. Lastly, *Ferruginous* baths may be employed in children of a relaxed frame, where the internal use of tonics is objectionable. They can be promptly prepared by the addition of half an ounce of the tincture of the sesquichloride of iron, or two drachms of sulphate of iron, to every ten gallons of water.

4. THE COLD BATH is a powerful stimulant and tonic of great efficacy, when judiciously used. It is indicated in delicate and strumous children, where there is weakness and languid absorption, without much irritability of the nervous system; and in the latter stages of convalescence from acute affections. No form of it is more efficacious than *sea-bathing*, especially when used in the middle of the day, during the summer months. We must, however, be careful not to prescribe it rashly, since it is by far too stimulating a remedy for infants, as well as for children prostrated by disease. Moreover, when it is ordered, directions should be given to discontinue it, if it gives rise to much alarm, and unless a proper reaction—indicated by an agreeable feeling of warmth and refreshment—follows its use; since only harm can result if the child remain cold and shivering, fatigued and prostrated, heavy and oppressed, for hours afterwards. Where, from any cause, bathing in the open sea is inapplicable, the use of the *shower-bath* will be found attended with many advantages, especially in children subject to nervous or convulsive affections. Only a small-hand bath, such as is made purposely for children, or a very large sponge, need be used; the water, at first, must be tepid; and the body should be afterwards well rubbed with a piece of flannel, or a coarse towel.

Cold sponging is a convenient and grateful method of moderating the excessive heat of simple fever, small-pox, scarlatina, &c.; or of any disease—excepting, perhaps, pneumonia. It is, however, more likely to produce catarrh, and is less efficacious than the *Shallow* bath; which is a most valuable means of reducing fever in children and women, when the heat of the body is above the normal standard—*i. e.*, above 96° or 98° Fah., as measured by the thermometer—and when it is not contraindicated by any visceral inflammation, or by the presence of general perspiration, or by too great irritability of the nervous system.* The *cold affusion* so successfully practised by Dr. Currie in the treatment of typhus, and since recommended by Dr. Armitage, is too powerful a remedy—as a general rule—for children. Still many German physicians, as Heim, Harder, and others, have attested its utility in the exanthemata, in typhus, in spasmodic croup, and in acute hydrocephalus, when other measures have failed. To practise it, the child is kept naked in an empty bath or tub, while a pailful of water, at 40° or 50° Fah., is poured in a stream over the head and chest, from a height of one or two feet. "The affusion acts," says Dr. Armitage, in speaking of its use in adults, "as a stimulant to the nervous system, but differs from all internal stimulants in common use, by acting at the same time as a cooling agent, whereas they increase the heat and fever. It really is what the ancients would have called a true 'Excitans frigidum,' and is therefore applicable in all conditions of fever in which a stimulating method is indicated; while, at the same time, it is desired to diminish the intensity of the fever." *

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* "The *Shallow Bath* is a bath about six feet long, with a depth of water varying from five to twelve inches. The temperature of the water varies from 60° to 80° Fahr. In this the patient is placed in a sitting position, with the lower extremities consequently covered by the water. They are constantly rubbed by an assistant, while water from the bath is poured gently over the head and trunk from a pitcher. This operation is occasionally interrupted, and the trunk is well rubbed by an assistant, who wets his hands in the water of the bath. The patient is kept in the water a variable time, until he is sufficiently cooled, which must be decided by the physician, according to his appearances during the bath. The immediate effect on the three great symptoms of fever—the temperature, frequency of pulse, and of respiration, is the same (they are diminished) as that observed after Currie's affusion, but this bath is not so stimulating, and the amount of stimulation can always be regulated, as the colder the water the greater the stimulus, and *vice versâ.*" Page 58. *Hydropathy as applied to Acute Diseas.* By T. R. Armitage, M.D. London, 1852.

SECTION IV.—BLOOD-LETTING.

The abstraction of blood from the system acts in four principal ways:—1. It diminishes the quantity of blood in the system. 2. It impoverishes the blood by increasing its watery constituent, and diminishing its fibrin and globulin. 3. Loss of blood weakens the heart's action. And 4. It causes general debility, with mal-nutrition of the various viscera and tissues.

The tolerance of blood-letting is admitted by all to be diminished in the very young, the old, and the feeble. We have only to consider its effects upon the very young; and, with regard to them, I may at once assert, as the results of my own experience and all that I have witnessed in the practice of others, that not only do they bear bleeding badly, but that I believe abstraction of blood is very seldom necessary in the treatment of their diseases. Indeed, I ought to say that the only infantile diseases in which I have found it necessary to take away blood during the last ten years, have been a very few in which some obstruction to the due circulation of the blood has existed,—as in certain cardiac affections: and, in three or four instances, to relieve the pain caused by mischief resulting from mechanical injury. When, however, I refer to authorities on these matters, and find full directions given for opening one of the brachial veins, or one of the veins on the dorsum of the foot or back of the hand, or—these failing—instructions for getting blood from the jugular vein; when I read, that cupping may be advantageously practised on infants less than a month old, and that leeches may be applied, and their bites allowed to bleed until exhaustion—indicated by great pallor, stupor, or convulsions—ensues; and when I remember that the mere mention of the words meningitis, laryngitis, croup, pneumonia, peritonitis, &c., almost makes the practitioner instinctively feel for his lancet: I say, that when I consider these things, I am almost

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* *Opus cit.*, p. 57.

tempted to fear, either that my experience has been too small, to enable me to form a correct opinion; or, that I may have been misled, owing to my patients having been chiefly amongst the poorer classes, and all of them residents in London.* However, as the opinion I have expressed is my deliberate and conscientious persuasion, I think it better only to make one or two brief remarks; more especially as, in subsequently speaking of each disease, I shall show clearly the plan of treatment which I am in the habit of adopting, and shall also often allude to that which I find recommended in books.

First, then, let me say, that no child should, under any circumstances, be bled without the most anxious reflection; nor without a strong conviction that no other plan of treatment will be as efficacious; nor without remembering that, though the circulation in childhood may be active, yet at this period of life slight causes produce great results; and that children, when greatly lowered, rally with difficulty.

Secondly, should it be determined that blood must be lost, I am convinced that leeches will effect all that can be required. They should be applied over some part where pressure can be resorted to, and in the presence of the practitioner, who should not leave the house until the bleeding from the bites has ceased.† Where there is any difficulty in stopping the hæmorrhage, the application of pressure, or of dry powdered starch, or of a small piece of glazed card, or of matico-leaf, or of the nitrate of silver, will generally suffice to do so: but these means failing, a fine needle should be passed under the bite, and a thin ligature twisted round it, much in the fashion adopted for the obliteration of varicose veins.

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* Dr. Rush, in his "Defence of Blood-letting," makes the following statement:—"I could mention many more instances in which blood-letting has snatched from the grave children under three or four months old, by being used three to five times in the ordinary course of their acute diseases."—*Medical Inquiries and Observations.* Vol. iv., p. 300. Philadelphia, 1798.

The late Dr. J. B. Beck—though much opposed to the copious bleedings recommended by Dr. Rush—says, "The physician who discards this agent (blood-letting), understands but poorly his profession, or the duty which he owes his patients. The proper use of a remedy, however, is one thing, the abuse of it is another; and I must express the opinion, founded on no small observation, that it is frequently resorted to in children when it is unnecessary—when necessary, it is often carried too far—and that in its general use, there is frequently an absence of precision and care, which, in many cases, renders it a most dangerous remedy."—*Infant Therapeutics.* 2nd ed., p. 99. New York, 1855.

† "I have twice known children bled to death in this way in hospital practice, the nurses having laboured under a common prejudice among their craft, that leech-bites cannot bleed too much."—*Dr. R. Christison's*

Thirdly, in deciding upon the quantity of blood to be removed, the practitioner must not be led away by the idea that children suffering from acute disease bear the loss of blood well. Moreover, he must remember that all the strength which they may have at the commencement of an attack will be certainly required to carry them through it.

Fourthly, during the first six weeks of life, the loss of about one ounce of blood is *said* to be sufficient to relieve most inflammations; from six weeks to twelve, an ounce and a half or two ounces; from four months to twelve, three or four ounces; and subsequently, an additional ounce for each year of the child's age.

Fifthly, each leech may be calculated as capable of withdrawing from four to six drachms of blood.

And, *sixthly*, I must add, that all authors agree that repetitions of bleeding are not well borne by the child.

SECTION V.—BLISTERS.

Blisters are substances which, when applied to the skin, irritate it, and occasion a serous secretion, raising the epidermis, and inducing a vesicle.* Various articles produce this effect, as cantharides—to which we generally refer in speaking of a blister—iodine, mustard, ammonia, &c.

Blisters are unfortunately regarded as safe remedies, which

Dispensatory, p. 493. 2nd ed. Edinburgh, 1848. "The loss of blood from a single leech-bite has caused the death of an infant."—*Ryan's Manual of Midwifery*, p. 677. 3rd ed. London, 1831. Dr. Pereira says, "In two cases of infants, I have seen this effect (exhaustion with insufficient reaction), consequent on hemorrhage after a leech-bite, terminate fatally."—*Elements of Materia Medica*. Vol. ii., p. 2194. 3rd ed. London, 1853.

* Dunglison's *Dictionary of Medical Science*. 7th ed. Philadelphia, 1848.

do no harm if they do no good: hence they are often used when they ought not to be. I have frequently seen them employed in the treatment of various inflammations; but usually—as it appeared to me—more from a desire to do something, than from any clear idea as to the purpose they were to fulfil. The observation of Celsus—"Satius est enim anceps auxilium experiri, quam nullum"*—is too frequently acted upon, instead of the safer and more philosophic aphorism of Boerhaave — "Abstine, si methodum nescis." What good, let me ask, can arise from applying a blister to the chest in a case of pneumonia? or to the neck in croup? or to the calf of the leg in cerebral or abdominal inflammation? None whatever! On the contrary, it will produce great constitutional inflammation, and perhaps sloughing, especially in infants and young children, whose skins are so vascular and sensitive. Hence we shall have two diseases to treat instead of one. Such practice is indeed most unscientific, and much to be reprobated.†

From these observations it must not be thought that I entirely condemn the practice of counter-irritation. On the contrary, in some chronic affections, in disorders which seem to be due to the suppression of an accustomed discharge, in diseases attended with effusion—after the subsidence of the acute symptoms, and in nervous pains,—blisters, mustard cataplasms, or irritating ointments may do good. Thus, in the cure of the enlarged glands of strumous children, time may be saved by the application of the compound tincture of iodine, or of the compound iodine ointment diluted with lard, or of the iodine paint—Formula 89. So also in some affections of the joints attended with copious effusion of serum, the application of blisters may stimulate the sluggish absorbents; but they certainly must not be applied until the acute symptoms have been controlled. In the same way they may perhaps do good in pleuritic effusions; in the latter stages of affections of the head, attended with great stupor, or coma; and in chronic cutaneous diseases of small extent, where it is thought desirable to induce increased action of the capillaries.

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* Liber ii., cap. 10.

† "I have seen a blister on the chest followed by sloughing, and an aperture form over the epigastrium, which exposed the subjacent viscera." —*A Manual of Midwifery*, by M. Ryan, M.D. &c. 3rd ed., p. 678. London, 1831. Mr. North also states that he has "twice known infants destroyed in consequence of the sloughing of blisters, the progress of which could not be arrested:" and again, "I have frequently seen very severe paroxysms (of convulsions) brought on in consequence of their injudicious and unnecessary application."—*On the Convulsions of Infants*, p. 202 and 209. London, 1826. In his work on the Materia Medica, Dr. Dunglison, speaking of the application of blisters to very young children in measles, scarlatina, &c., says, "The author has known several cases of death manifestly caused by the use of blisters under such circumstances, although it is probable, that in most of them a fatal event might have ultimately resulted from the disorganization produced by the mischief for which the blister was recommended. Vol. ii., p. 219. 4th ed. Philadelphia, 1850.

Owing to the inflammation produced by blisters in the young, the emplastrum cantharidis should either be diluted with three times its weight of soap cerate, or if used of the usual strength, the blister should not be suffered to remain on for more than two or three hours; and it will be advisable in all cases to further moderate the action, and prevent all chance of renal inflammation and vesical irritation, by interposing a piece of thin muslin or tissue-paper between the plaster and the skin. The blistered surface must subsequently be dressed with simple cerate freely spread on lint: or, if the sore be very irritable, with some soothing ointment—as F. 5—or with a warm bread and-water poultice.*

Where it is only wished to produce a mild effect, a sinapism made of equal parts of mustard and flour, applied for ten or twenty minutes, will be found to answer every purpose. It must not be forgotten, however, that when the skin is very delicate, even a sinapism will give rise to great general excitement, as well as to severe local irritation.

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* "With regard to the dressing of a blister, always a matter of importance to the young subject, and frequently so to the adult, I would call the attention of the reader to a mode very recently recommended by Dr. D. Maclagan, of Scotland, which holds out many advantages over the ordinary method. After leaving the blister on for a suitable time, he applies a poultice of bread and milk for two hours. After discharging the serum, a thick layer of soft cotton wadding is applied over the part, with the undressed or woolly surface next to the skin. If in the course of a few hours this should become soaked with the serous discharge from the blister, so much of the cotton may be removed as can be done without disturbing the loose epidermis beneath, and the whole again covered with a dry layer of cotton. This is all the dressing which in general is requisite. The cotton is allowed to stick to the skin of the blistered part, and when a fresh layer of epidermis is formed, which takes place very readily, the old epidermis and cotton come off together, leaving a smooth whole surface below." Dr. J. B. Beck.—*Opus cit.*, p. 73.

SECTION VI.—PURGATIVES.

Cathartics cause alvine evacuations by increasing the peristaltic motion of the intestines, and by promoting secretions from the mucous lining. The milder purgatives—laxatives or lenitives—operate chiefly by their influence on the muscular coat of the intestines; the stronger ones—hydragogues and drastics—stimulate the mucous follicles and exhalants, and produce copious watery stools.

Cathartics are principally used in the diseases of children:—1. To empty the alimentary canal, and thus to relieve those morbid symptoms dependent on undigested food, morbid secretions, worms, retained feculent matters, and poisonous agents. 2. To establish, healthy alvine secretion, when this is defective. 3. To promote the elimination of morbid poisons contained in the blood. 4. To relieve plethora and congestion by diminishing the volume of the circulating fluid. 5. To augment the action of the absorbents. 6. To relieve inflammation—especially inflammatory affections of the head—by exciting secretion and exhalation from the extensive mucous surface of the gastro-intestinal canal, by promoting expulsion of morbid agents from the system, and by favouring absorption of some of the effused products. 7. To promote the secretions of the liver and pancreas. 8. To affect remote organs by their operation as revulsives or counter-irritants, which they accomplish by the impression they make on the intestinal nerves, by the determination of blood which they produce to the abdominal organs, and by the augmentation of secretion which they effect.*

The cathartics or purgatives which we chiefly employ are of the milder class; and even these have to be used with caution, for nothing is more pernicious than the indiscriminate exhibition of "opening medicines" to children. Indeed, a judicious alteration of the food will often obviate recourse to any aperient medicine whatever; and should therefore generally be tried when there is merely torpidity of the bowels without any derangement of the secretions.

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* Dr. Pereira. *Opus cit.*, vol. i., p. 241.

1. Castor Oil—obtained from the seeds of the *Ricinus communis* by expression—is an efficacious aperient when we merely wish to empty the intestinal canal. It is prompt in its effects, acts thoroughly, and does not produce griping or flatulence. It is perhaps especially valuable in the diarrhœa which results from improper food, since it thoroughly removes the offending matters; in habitual costiveness, when care is taken gradually to diminish the dose; and also in inflammatory affections of the abdominal viscera, when a mild but efficient purgative is indicated. Dose, ʒj. to ʒij.

2. Manna is procured both in Calabria and Sicily by tapping the trunks of the *Fraxinus ornus*: flake manna, which should alone be used, being obtained from young stems during the months of July and August, when the juice flows vigorously. It is nutritive and laxative, but uncertain in its action, and apt to gripe. Its sweet flavour is its best recommendation. Dose, ʒss. to ʒij. dissolved in warm milk and water, or in some innocent demulcent fluid.—F. 6, 7, and 8.

3. Carbonate of Magnesia—a compound of magnesia, carbonic acid, and water—is a mild, antacid, tasteless, and somewhat sedative aperient. It may be mixed with the milk or other food, and given overnight, or may be combined with other purgatives. Occasionally, when the stomach is very irritable, magnesia saturated with lemon-juice will be tolerated after all other aperients have been vomited. Dose, from gr. v. to ℈j. or ʒss.—F. 4, 5, and 8.

4. Rhubarb—the root of a species of *Rheum*—acts as an astringent tonic in small doses, as a mild aperient in larger quantities. Hence it is very efficacious in mild diarrhœa, inasmuch as it first expels the irritating cause, and then acts as an astringent. It is also considered to be especially useful in the constipation of strumous children, acting as an

alterative on the constitution, and helping to restore the tone of the stomach and intestines. Dose, as a purgative, gr. iv. to gr. vj. for an infant less than one year old: after this age, gr. x. to ℈ j.:—F. 1, 2, 4, 8, 10, and 11.

5. Saline Aperients.—The neutral salts are useful in the febrile and inflammatory affections of childhood, when it is necessary to gently deplete the system. They produce copious liquid stools, but do not always clear out the bowels of their solid contents. Hence it is often necessary to administer castor oil or rhubarb, before resorting to them, or to combine them with other aperients. The salts most used are the sulphates of potash or magnesia, or the bitartrate of potash.—F. 2, 3, 6, &c.

6. Jalap—the dried tubers of the *Excogonium purga*—is an irritant drastic purgative, well adapted for clearing out the alimentary canal when it is overloaded, and when not contra-indicated by the existence of inflammation of the intestines, or of any of the pelvic viscera. It is best administered in combination with some other purgative; as with ipecacuanha, in pulmonary affections; or with calomel, in torpidity of the liver; or with scammony in verminous diseases; or with the sulphate of potash—when we wish to deplete by producing copious serous discharges from the bowels. The dose, in powder, is from gr. ij. to gr. v. for children under one year of age; subsequently, from gr. v. to gr. xv. or xx.—F. 9, 15, 16, and 41.

7. Scammony is the gummy resinous exudation obtained from incisions into the root of the *Convolvulus Scammonia.* It is usually imported from Smyrna, and is almost always adulterated. Hippocrates, who employed it, observes that it evacuates, both upwards and downwards, bile and mucus, and expels flatus. It is adapted for children in whom there is a torpid and inactive condition of the abdominal viscera; as a hydragogue cathartic in dropsy and cerebral affections; and as an anthelmintic in verminous diseases. It should not be given alone. Dose, gr. j. to gr. iij.—F. 11, 12, 13, and 14.

8. Aloes—the inspissated juice of various species of Aloe—is a stimulating purgative, not often employed for children on account of its bitterness. As it acts specifically on the

lower intestines it is very valuable as an anthelmintic.—F. 17 and 20. The compound decoction of aloes may be given to infants and children in doses from ʒj. to ʒiv.: it may be beneficially employed to promote the secretion of bile.

9. Enemata.—In administering an enema to a child, care must be taken to avoid giving pain or producing any mechanical injury. A syringe with an elastic pipe ought to be used: and the tube—well covered with lard—should be gently introduced with a slight inclination towards the left side. The quantity of fluid employed requires attention, since the intestine readily dilates, and if over-distended soon loses its tone. For an infant at the breast, one ounce is the proper quantity; from one to five years, three or four ounces; and from five years to ten or fifteen, about six ounces. *Purgative* enemata are efficacious in constipation depending upon obstruction of the intestine, intussusception, &c.; or in cases where the rectum and lower intestines are loaded from an accumulation of fæces; or when we wish to dislodge ascarides from the rectum:—F. 20. *Emollient* or *Astringent* enemata should be employed in cases of diarrhœa, not depending upon any irritating matters in the intestines; and also when we wish to allay irritation of the bladder:—F. 50, 71, and 74. Lastly, in some examples of constitutional disease, accompanied with great irritability of the stomach, *nutritive* enemata will serve to nourish the child, until the force of the malady is allayed. —F. 72.

SECTION VII.—EMETICS.

Infants vomit more freely and with less distress than adults; chiefly because their stomachs are more elongated, and more closely resemble the intestines in form, than they do in after life. This wise provision, not only enables the infant readily to get rid of the contents of the stomach, when a superfluity of food—or food of an improper kind—has been taken; but it is also, as it appears to me, a therapeutical indication of no small value. Hence, I confess that remedies of the class now to be considered are frequently prescribed by me, and apparently with great benefit.

Emetics are chiefly valuable when we wish to evacuate the stomach, or to promote secretion and excretion, or to depress the vascular and nervous systems. They should not be had recourse to when the stomach or any of the abdominal viscera are inflamed, nor when the head is much affected, nor when there is great debility.

In the early stages of many acute diseases, emetics do great good, and are generally more valuable than purgatives. "Innumerable times," says Hufeland, "has a fever, ushered in by convulsions and other signs of disorder, been immediately cut short by an emetic." When the eruption fails to come out kindly in any of the exanthemata, an emetic does good. In hooping-cough, catarrh, and most bronchial affections, emetics do good in all stages: for in the early periods, they tend to promote the resolution of the inflammation by increasing the secretion from the affected parts; while subsequently, when there is oppressed respiration from a too copious secretion of mucus, a fit of vomiting gives almost instant relief by helping to clear the overloaded bronchial tubes of the viscid phlegm which obstructs them, as well as by emptying the stomach of the expectorations which the child has swallowed. I think also, that I have seen great benefit from commencing the treatment of a case of cynanche tonsillaris with an emetic, and the same in pneumonia. In the latter instance, however, it is doubtful if these agents are of any value, unless employed quite at the onset of the attack. The exhibition of an emetic in croup may often be beneficial, since it will not only tend to equalize the circulation and promote perspiration, but will also often help to expel the false membrane exuded by the mucous membrane of the trachea. In hepatic derangements and some examples of dyspepsia, emetics do good by promoting the secretion and excretion of bile, gastric juice, &c. And, lastly, in strumous and delicate children with poor appetites, a mild emetic will very generally serve to renew the tone of the stomach, at the same time that it imparts a stimulus to the whole system, and especially to the organs of secretion and excretion.

In the administration of an emetic, we should be careful not to give too large a dose; to repeat it every fifteen or twenty minutes until free vomiting ensues; to assist its action by allowing the child to drink freely of tepid water, which may be sweetened; and to exhibit it, if possible, in the evening, since the sleep and perspiration which it induces, are less likely to be interfered with, than at other times of the day. As regards the emetic to be used, we have,—

1. IPECACUANHA—the root of the *Cephaëlis Ipecacuanha*—which is decidedly the best; being safe, mild, very efficient, and much less depressing than tartar emetic. In addition to producing vomiting, it promotes expectoration, acts on the skin, controls inordinate action of the bowels, and is easily administered. Dose of the powder, gr. ss. to gr. j.; of the wine, ʒss. to ʒij.—F. 23, 24, &c.

2. TARTARIZED ANTIMONY—a compound of teroxide of antimony, potash, tartaric acid, and water—is more irritating and depressing than ipecacuanha; and though more powerful, is not so certain in its action. Sydenham advises that antimonial emetics should not be given to children under eight years of age; and this useful caution should be borne in mind unless it is thought desirable to lower the system. Dose, from gr. $\frac{1}{16}$ to gr. $\frac{1}{4}$; the antimonial wine of the London Pharmacopœia contains gr. $\frac{1}{4}$ in ʒi.*—F. 24.

3. SQUILL—the bulb of the *Scilla Maritima*, or Sea-Onion—is sometimes a good stimulating emetic in the bronchial affections of children; especially if it be deemed desirable to produce a mild diuretic action, in addition to vomiting. The oxymel scillæ may be given in half-drachm doses, frequently repeated; or it may be combined with tartar emetic, as in F. 24.

4. SULPHATE OF ZINC—readily obtained by dissolving zinc in diluted sulphuric acid—is prompt in its action, and does not give rise to any exhaustion. It is useful when any deleterious agent has been taken, and it is merely desired to evacuate the contents of the stomach. From gr. v. to gr. x., or even ℈j. may be given according to the age, dissolved in warm water, and repeated every ten minutes until vomiting is produced.

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* Dr. John Clarke states that "a quarter of a grain of tartrate of antimony in solution has been known to excite a vomiting which has ended in the death of a young child, which before was in no danger."—*Commentaries on some of the most important Diseases of Children*, p. 33. London, 1815.

SECTION VIII.—EXPECTORANTS.

Medicines which increase the secretion—and promote the expulsion—of mucus and other matters from the larynx, trachea, or bronchia, are known as *expectorants.* They are divided into two classes, topical and general; but, as the former are not available in the treatment of children's diseases, we have merely to consider the latter. "Of all the classes of the Materia Medica," says Dr. Pereira, "none are more uncertain in their operation than expectorants. Most of the agents employed as such act relatively; that is, they obviate the causes which interfere with healthy secretion. Many of them are substances which modify the vital activity of the aërian membrane by an alterative influence, and in this way relieve bronchial affections, expectoration being by no means an essential part of their operation."*

General expectorants are of two kinds—nauseating and relaxing, and stimulating. In the *first* division, we have ipecacuanha and tartar emetic, both well adapted to those acute and sub-acute cases in which excessive vascular excitement prevails: in the *second* class must be arranged—squill, senega, assafœtida, and probably the sesquicarbonate of ammonia, all of which are useful in chronic cases of catarrh, and in sub-acute bronchitis attended with spasm of the muscular fibres of the bronchi. The action of all expectorants is promoted by keeping the body moderately warm, by the free use of diluents, and by the previous operation of an emetic; while opiates, purgatives, and cold retard their effects, and lessen their power.

1. IPECACUANHA is the expectorant most frequently used for children, given in doses of gr. ¼ to gr. ss.—or of the wine ♏v. to ♏xv.—every three, four, or six hours. When the inflammatory symptoms run high, it should be combined with tartar emetic, or with calomel; when the cough is violent, or the stomach very irritable, a minute quantity of opium must be given with it, to allay the former, and to enable the latter to tolerate this expectorant. F. 26, 29, 30, 31, 33, 35, &c.

2. TARTAR EMETIC is more active than the preceding, and is

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* *Opus cit.*, vol. i., p. 236.

consequently often employed in acute cardiac or pulmonary inflammations—especially pneumonia—where the skin is dry and hot, the expectoration deficient, and the breathing hurried and difficult. As a rule, it is thought to be more efficient in inflammations of the mucous than of the serous membranes. Great prostration, or any intestinal irritation, forbid its use. When prescribed its effects must be watched. It may often be advantageously combined with calomel, opium, &c. Dose, gr. $\frac{1}{20}$ to gr. $\frac{1}{16}$, or $\frac{1}{8}$, repeated every four or six hours. As the Vinum Antimonii Potassio-Tartratis contains gr. $\frac{1}{4}$ of tartar emetic in each ʒj, the dose will be from ♏v. to ♏xv. or xx. —F. 26, 28, 32, 33, and 34.

3. Squill is useful in sub-acute bronchitis, and in other affections attended with cough and viscid phlegm, but unaccompanied by fever. It is most efficacious combined with other remedies. Dose of the tincture ♏v. to ♏x.; of the vinegar ♏viij. to ♏xx; of the oxymel ♏xx. to ʒj.—F. 25, 26, 30, and 33.

4. Senega—the root of the *Polygala Senega*, of North America—is stimulant, expectorant, diaphoretic, and diuretic in small doses; emetic and purgative in large. It is most effective in the latter stages of bronchial or pulmonary inflammation, especially when combined with ammonia and squill; also in chronic catarrh, in the second stage of croup, and in some forms of dropsy. The Decoctum Senegæ of the London Pharmacopœia, should be prescribed for children in doses of ʒss. to ʒij.—F. 25, 27, 29, 39, 52, &c.

5. Assafœtida—a gummy-resinous exudation obtained from the root of the *Narthex Assafœtida*, of Persia—is a very excellent stimulant, expectorant, and antispasmodic; of a very offensive odour—hence called by the Germans *Teufelsdreck*, or *Stercus Diaboli;* and by no means employed as frequently as it should be. From the results of my own experience I can, however, affirm that it is a very valuable remedy; especially in the latter stages of bronchitis and pneumonia, in simple catarrh where the cough is dry and harsh, in some examples of pertussis, and in laryngismus stridulus and other spasmodic or convulsive affections not dependent on disease of the nervous centres. It sometimes produces nausea, but this is

soon overcome; and although children do not become fond of it, like the Asiatics, yet I have found little or no difficulty in getting them to take it, after the first feeling of repugnance has been conquered. The dose of the tincture is from ♏v. to ♏x. or xv., every three or four hours; or if employed in the form of a clyster from ♏xx. to f.ʒss. may be prescribed. —F. 39, 53, 56, 57, 71, 79, &c.

SECTION IX.—DIAPHORETICS.

Medicines which promote the cutaneous exhalation are termed diaphoretics or sudorifics. They are employed to restore the cutaneous secretion when this has been checked by cold; to promote subsidence of those diseases which naturally end by augmented cutaneous exhalation, as simple fever and the exanthemata; to produce determination to the skin in congestions of internal viscera; and to establish a substitute for other secretions, as of the renal secretion in Bright's disease, &c. In the disorders of children, however, we do not resort to these remedies as frequently as in the diseases of adults: in the first place, partly because they are uncertain in their action in all cases, but especially in children in whom perspiration is not very readily induced; and secondly, because warm water and vapour baths generally fulfil all that we could obtain from drugs.

1. Nitrate of Potash—is the only diaphoretic to which it is necessary here to allude; since I have already shown that ipecacuanha and antimony act upon the skin, and in the next section the tendency of opium and its alkali morphia to produce copious sweating will be fully referred to.

The nitrate of potash which we use in this country is obtained by the purification of the native nitre of India; the district of Tirhut in Bengal being especially productive. In moderate doses it acts as a refrigerant, antiphlogistic, diaphoretic, and diuretic: hence it is used in febrile disorders, common catarrhs, sore throat, &c. Dr. Young states that it also acts as a stimulant to the bladder or its sphincter, and that—owing to this property—he has found it useful in incontinence of urine in children. Its protracted use disorders the functions of digestion and assimilation. Dose from gr. ij. to gr. vj. frequently repeated: it is best administered in solution, but it may be mixed with white sugar and taken as a sort of bon-bon.—F. 32, 35, and 36.

SECTION X.—SEDATIVES AND NARCOTICS.

The remedies of this class allay pain and morbid sensibility, diminish inordinate action of the organs of respiration and circulation, and induce sleep: they are of the greatest value in the treatment of the diseases of children, but require to be prescribed with caution and judgment. Their effects are due to their diminishing the heart's action, by repressing the nervous influence; consequently the results obtained from their use will entirely depend on the state of the system at the time of their administration, and upon the dose employed. Thus, if used in a plethoric state of the vascular system, or in too large a quantity, they give rise to great depression, to giddiness and staggering, to weakness of the retina so that vision is rendered imperfect, and to stupor which may end in profound coma. Consequently they are contra-indicated in plethora, in all cases in which there is undue determination of blood to the brain or to any other vital organ, and in highly inflammatory states of the system generally. On the other hand, however, in all cases of gastric or intestinal irritation, protracted diarrhœa, dysentery, &c.; in the latter stages of inflammatory affections; in disorders due to the suppression of the cutaneous exhalation; in all spasmodic diseases, as trismus nascentium and hooping-cough; and in irritable conditions of the system from causes beyond our removal, as dentition, continued fever attended with great restlessness, the exanthemata, &c.: in all such, sedatives and narcotics are invaluable.

1. Opium.—This drug—the most important and most certain of the narcotics—consists of the inspissated juice of the unripe capsules of the *Papaver somniferum* or white poppy. Its primary operation is stimulant; its secondary, sedative and narcotic: in infants and young children the secondary effect follows very quickly upon the first.

The fact that the infantile constitution is peculiarly susceptible to the influence of opium has led to the expression of various opinions on the propriety of employing this agent during the early months of life: some having argued, that in consequence of this general susceptibility and because two and three drops of laudanum have proved fatal to infants only a very few days old, therefore the remedy is too dangerous for us to employ. But it appears to me that this circumstance merely teaches us to use a valuable weapon with great caution, and not to discard it; to carefully select the cases in which it may seem necessary; to assiduously and narrowly watch its effects; to administer it in very small doses, at proper intervals; and above all to take care that soothing cordials, syrups, and all quack poisons containing it be banished from the nursery, so that it may never be surreptitiously given.*

The appearances which are produced by the prolonged administration of opiates are peculiar and readily recognized. Owing to this, I was enabled on one occasion to assert that an infant, about whom my opinion was sought, was being improperly drugged; and on inquiry the nurse allowed that *she was obliged* to administer Brown's or Robinson's poisonous carminative to obtain a night's rest. In this case—as in all similar ones—there was general emaciation, languor, a withered sallow countenance, red and swollen eyelids, derangement of the digestive organs with loss of appetite, and constipation of the bowels with white stools. As the cause of these appearances was gradually removed, the child improved; and under the care of a more conscientious nurse ultimately got strong and well.

Dose and form of exhibition.—The dose of opium for an infant must be very small, and—as a rule—an interval of five or six hours should elapse between each administration of the medicine: while in many cases it will only be necessary to renew it once or twice in the twenty-four hours. If the *tincture* be employed, not more than the eighth or fourth of a drop should be given to an infant under three months; at six months, half a drop; and so on gradually until the fourth year, when about five drops may be administered as a full dose.—F. 46, 47, 48, 73, &c. The *compound tincture of camphor* is a convenient form for infants, in doses of two to twenty drops, according to the age.—F. 28, 32, 33, 37, &c. With some practitioners *Dover's powder* is regarded as a mild and safe opiate, from a quarter to half a grain being used during the first three months, and from one grain to two or three after the first year.—F. 30 and 42.

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* In the year 1840 there were 75 deaths from poisoning by opium in England and Wales. Of these, 42 occurred in children under five years of age, chiefly from over-doses of medicines administered by mothers and nurses.

Syrup of white poppies is a favourite remedy with many, but unfortunately it often varies in strength: for an infant four months old, the dose should not exceed f.ʒss.—F. 29, 30, 33, &c. In children beyond one year of age, minute quantities of *morphia* are often very beneficial, especially for the relief of hooping-cough, spasmodic cough, &c. One drop of the liquor morphiæ acetatis or hydrochloratis of the London Pharmacopœia may be given every six hours in any pectoral mixture to a child twelve months old.

Besides administering opiates by the mouth, we may take advantage of the delicacy and susceptibility of the skin to obtain their effect by inunction, or even by the application of opiate plasters. A liniment of opium rubbed along the abdomen or spine will often remove the irritation and fretfulness caused by dentition; or will moderate convulsions arising from an irritable state of the bowels. And lastly, we may procure the full effect of this remedy, by administering it as an enema, in doses of one, two, or three drops—according as the age is two, four, or six months: this method being especially valuable in some instances of protracted diarrhœa. —F. 74.

The following table shows the quantity of opium contained in various preparations; Godfrey's Cordial and Dalby's Carminative being included in the list, not because they should ever be prescribed, but, inasmuch as they are sometimes surreptitiously used by nurses, it may be necessary for the medical man to be able to form an opinion as to the quantity of opium which has been given in any particular case.

		Of Opium.
Confectio Opii	contains	gr. j. in gr. xxxvj.
Enema Opii	,,	gr. iss. in ℥iv.
Linimentum Opii	,,	gr. xij. in ʒij.

		Of Opium.
Emplastrum Opii	contains	℥j. in ℥xis.
Pilula Saponis Composita	,,	gr. j. in gr. v.
Pilula Styracis Composita	,,	gr. j. in gr. v.
Pilula Ipecacuanhæ cum Scilla	,,	gr. ½ in gr. x.
Pulvis Cretæ Compositus cum Opio	,,	gr. j. ℈ij.
Pulvis Ipecacuanhæ Compositus	,,	gr. j. in gr. x.
Pulvis Kino Compositus	,,	gr. j. in ℈j.
Tinctura Camphoræ Composita	,,	gr. ij. in ℥j.
Tinctura Opii	,,	gr. j. in ♏xix.
Unguentum Opii	,,	℈j. in ℥j.
Vinum Opii	,,	gr. j. in ♏xix.
Syrupus Papaveris	about	gr. j. in ℥j.
Godfrey's Cordial	contains	gr. j. in ℥ij.
Dalby's Carminative	,,	gr. ¼ in ℥ij.
		Of Morphia.
Liquor Morphiæ Acetatis	,,	gr. j. in ʒj.
Liquor Morphiæ Hydrochloratis	,,	gr. j. in ʒj.

2. Hyoscyamus—obtained from the leaves and seeds of the *Hyoscyamus niger* or common henbane—has a less soothing and tranquillizing effect than opium; but then it possesses the advantage of neither quickening the pulse, checking secretion, nor causing constipation. It may be used in small and repeated doses, as a sedative and soporific in sleeplessness; as an anodyne to allay irritation and pain; as an antispasmodic, in disorders attended with spasm; and indeed in all cases where—a narcotic being needed—opium is objectionable or disagrees. The dose of the tincture is from ♏ij. to ♏xv., as the age varies from one month to three or four years.—F. 40, 45, 82, &c.

3. Digitalis—the seeds and leaves of the *Digitalis purpurea* or purple foxglove—is a direct sedative; lessening irritability, lowering the pulse, and augmenting the secretion of urine. Its use is indicated in inflammatory affections where we desire to lower the heart's action, in anasarca dependent on cardiac disease, and in some spasmodic affections where opium cannot be tolerated. Combined with Lobelia inflata, it is said to be a good substitute for antimony, in pneumonia, acute bronchitis, &c. There seems reason to believe that it is a cumulative medicine; hence its effects must be watched, and it should be discontinued if it produce great nausea or exhaustion. It is best exhibited in the form of tincture or infusion:

of the former—♏j. or ♏ij. may be administered three or four times a day to children under a year; of the latter—♏xv. to ♏xxx.—F. 76 and 80.

4. Acidum Hydrocyanicum Dilutum (Phar. Lond.).—This acid was discovered by Scheele in 1782, and was named prussic acid, because he procured it from prussian blue. It is principally obtained by decomposing some of the compounds of cyanogen; but it exists naturally in the kernels of plums, peaches, &c. There are two preparations in common use; one—the Pharmacopœial—contains 2 per cent. of acid, while the other—Scheele's—has from 4 to 5 per cent.

In medicinal doses this medicine is sedative and anodyne: it is thought to allay pain dependent upon nervous irritability, and to depress the force of the circulation. It is useful in gastrodynia, in obstinate vomiting not caused by inflammation, in laryngismus stridulus, in chronic coughs, and in some cases of pertussis. Dr. Atlee, of Philadelphia, used it successfully in 200 cases of hooping-cough; administering one-eighth of a drop twice a day to children six months old, one-quarter to children between one year and two, and so on.—F. 77, 78, 82.

5. Chloroformyle.—Chloroform, or the perchloride of formyle—a compound of 2 atoms of carbon, 1 of hydrogen, and 3 of chlorine—was discovered by Soubeiran in 1831; though it was reserved for Professor Simpson to make known its anæsthetic properties in 1847. The vapour of chloroform may be safely used to narcotise children, but care must be taken that the narcotism is not carried to the extent of producing stertorous breathing: it must also be administered slowly, well diluted with atmospheric air, and when the stomach is empty. In some cases—especially perhaps in infants and very young children—the chloroform may be diluted with an equal portion of spirits of wine; or, what is better, the sulphuric æther may be used, unless its powerful smell be deemed too objectionable. Anæsthesia has been employed with decided success in infantile convulsions, laryngismus stridulus, pneumonia, pertussis, chorea, and spasmodic hiccough, &c. I believe also that it may be advantageously tried in many cases merely to allay exhausting pain and to remove sleep-

lessness. Dr. Snow considers that when death arises from the inhalation of chloroform, it is due to the direct influence of this agent upon the heart, whose action it stops. In case of accident, he believes artificial respiration, promptly and efficiently performed, affords the best prospect of success.

6. AMYLENE—is made by distilling fusel or potato oil with chloride of zinc: it is a colourless liquid, of very low specific gravity; very volatile; has an odour somewhat resembling naphtha; and its vapour is much less pungent than that of ether or chloroform, and hence it does not cause choking or coughing. The vapour of amylene was first employed to produce insensibility during surgical operations by Dr. Snow: who states that its advantages over chloroform are—that it prevents pain with a less amount of stupor or coma; that it does not produce sickness, nor depression, nor struggling; that patients rapidly recover from its effects, without suffering from any after inconvenience; and that probably its use is attended with less danger. The disadvantages are—the larger quantity required to be inhaled to produce insensibility, and its unpleasant odour. In the present state of our knowledge it will not be advisable to employ this agent for narcotising children.

SECTION XI.—ALTERATIVES AND RESOLVENTS.

Alteratives, resolvents, or liquefacients are medicines which promote secretion and exhalation generally, soften and loosen textures, check phlegmonous inflammation, lessen inflammatory effusions, and promote their reabsorption. They are opposed to the exudation of plastic or coagulable lymph—hence they check union by adhesion—and to the formation of false membranes. During their use, visceral and glandular enlargements and indurations, thickening of membranes, and non-malignant morbid growths of various kinds, are sometimes observed to get smaller and softer, and ultimately to disappear.* The chief agents of this class are mercurials, iodine and its combinations, antimonials, and alkalies.

7. MERCURIALS.—The different preparations of mercury are extensively used in the diseases of children, and, when judi-

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* Pereira. *Opus cit.*, vol. i., p. 175.

ciously employed, with the best results. Even during infancy comparatively large doses of these agents are usually well borne; and it is remarkable that at this period of life, and up to the third or fourth year, salivation is never, or very rarely, produced. This circumstance, however, must only make us more cautious in prescribing any preparation of mercury: since, in consequence, we are deprived of a valuable criterion by which to judge of the effect of the remedy on the constitution; for it must not be thought that because mercury does not salivate an infant, that, therefore, it does not affect the system.*

The principal ill effects which sometimes result from the use of mercury are, violent purging and griping, profuse sweating, a disordered state of the digestive organs, with loss of appetite and wasting, a tendency to early decay of the teeth,† a tremulous condition of the muscular system, eruptions on the skin—eczema mercuriale—and, after the fourth or fifth year, salivation. With regard to salivation, however, it must be remembered that this condition *may* be produced by a few other medicinal agents, as iodine, arsenic, antimony, nitric acid, and even opium, and also that it sometimes arises spontaneously. Gangrene of the mouth—cancrum oris—is a disease which is often mistaken for the effects of mercury; but although, in this distressing affection, there is a copious secretion of saliva, with ulceration or gangrene of the inside of the cheek, yet the morbid action is more circumscribed, and the gums, salivary glands, and tongue are not all swollen and inflamed as they are from the first in mercurial ptyalism.

The chief value of mercurials is usually thought to be experienced when they are given in inflammations of the serous membranes, as in meningitis, pericarditis, pleurisy, and peritonitis; in inflammations of the mucous membrane of the air-passages, especially croup; in iritis; synovitis; congestive states of the liver, and mucous follicles of the intestines; and in syphilis, congenital or acquired. It must be confessed, however, that we are still ignorant of the exact value of this class of medicines in many of the foregoing disorders; and it is by no means improbable that, as our knowledge increases, we may find the employment of the various preparations of mercury greatly diminish. Mercurials are also administered in small doses as alteratives in certain chronic skin diseases, in some forms of dyspepsia, and in many cases to improve the secretions of the liver, pancreas, &c.; and in large doses as purgatives, though the practice of employing calomel and other mercurials as ordinary purges is bad. Their employment is generally contra-indicated in strumous children, and in cases where there is great irritability of the stomach or bowels.

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* "Children will take an immense quantity of mercury without the salivary glands becoming affected. We ought not, however, on this account to give it incautiously; for it will sometimes happen, that without salivation, the parotid duct will be excited by it into violent inflammatory action, in which the parotid gland and the whole cheek will be speedily involved, and sphacelus, or a rapid ulceration, will be the consequence. I have seen both cheeks entirely removed by this process. Nothing with which I am acquainted has the slightest tendency to check its progress."—*A Compendium of Medical Practice.* By James Bedingfield, p. 295. London, 1816.

† Bell, *On the Teeth*, p. 129. 2nd ed. London, 1835.

Hydrargyrum cum Cretâ is a mild laxative, antacid, and alterative. It is very valuable in acute hydrocephalus, in infantile syphilis, and in diseases due to—or accompanied by—faulty secretions. Dr. Pereira states that in strumous affections of children (especially enlarged mesenteric glands), and other chronic maladies, it is administered with great advantage as an alterative. Dose for infants and children from one to three grains.—F. 10, 34, &c.

Hydrargyri Chloridum, or Calomel, is a preparation frequently employed in inflammatory affections when the full influence of mercury is desired. It may be advantageously combined with other remedies.—F. 9, 13, 34, 42, and 44. Calomel may be given alone, especially when we wish to act on the bowels, in doses of a quarter or half a grain, or a grain or two, frequently repeated.

Unguentum Hydrargyri is most advantageously used when we wish to thoroughly affect the constitution, as in congenital syphilis, &c., or to destroy parasitic animals on the skin. Mercurial inunction may also be employed in cases where mercury in other forms is inadmissible. For a child one year old, ℈j. to ʒss. may be applied over—or gently rubbed into —the thighs, or abdomen, or the axillæ, night and morning. To destroy parasitic insects, one application will commonly suffice.

Hydrargyri Bichloridum may sometimes be advantageously used in the diseases of childhood, especially in enlargement of the mesenteric glands and some forms of hydrocephalus. It may be given in combination with antimony and opium in lingering inflammations of a subacute nature; or with the compound tincture of cinchona—notwithstanding a slight chemical decomposition takes place—in mesenteric affections attended with debility; or with tincture of rhubarb in constipation with deranged secretions. Dose, gr. $\frac{1}{30}$ to gr. $\frac{1}{16}$; or of the liquor hydrargyri bichloridi, ♏xx. to f.ʒss.

The following table shows the strength of the various preparations of this metal:—

		Of Mercury.
Hydrargyrum cum Cretâ	contains	gr. iij. in gr. viij.
Pilula Hydrargyri	,,	gr. j. in gr. iij.
Linimentum Hydrargyri	,,	gr. x. in ʒj.
Ceratum Hydrargyri Compositum .	,,	ʒij. in ʒvij.
Unguentum Hydrargyri	,,	ʒj. in ʒij.
		Of Calomel.
Pilula Hydrargyri Chloridi Composita	,,	gr. j. in gr. v.
		Of Bichloride.
Liquor Hydrargyri Bichloridi . . .	,,	gr. ½ in f. ℥j.

2. Iodine and its Combinations.—Iodine exists in both kingdoms of Nature: in the inorganic, as iodide of zinc, silver, mercury, &c.; in the organic, in some animals, especially such as belong to the genera *Spongia*, *Gorgonia*, &c., and in a considerable number of vegetables, particularly those belonging to the family *Algæ*. British iodine is manufactured at Glasgow from the kelp obtained off the west coast of Ireland and the western islands of Scotland.

As a remedial agent, iodine is principally valuable for its resolvent influence in chronic visceral and glandular enlargements; in indurations and thickening of membranes, as of the periosteum; and in non-malignant morbid growths. It is especially indicated in scrofulous affections, in bronchocele, in diseases of the lungs and bronchial tubes simulating phthisis, and in the early stages of phthisis. It is said to be contra-indicated in febrile and acute inflammatory complaints, in many of which mercury is thought to be more valuable; but the results which I have witnessed from the employment of the iodide of potassium in some of the severe inflammatory diseases of childhood—as croup and pneumonia—lead me to doubt the correctness of the restriction. Its long-continued use sometimes produces troublesome sleeplessness, increased secretion from the mucous membrane of the eyes and nose and from the salivary glands, cough, emaciation, vomiting and purging, and chronic gastro-enteritis. When it disagrees, or when it has been given too largely, it must, of course, be discontinued; and amylaceous diluents, with sedatives and emollient enemata, are to be resorted to.

As a topical remedy—either alone, or conjoined with the internal administration—iodine is valuable in cutaneous scrofula, in rheumatism, in affections of the joints, in bronchocele or goître, and in some diseases of the skin, as lupus, psoriasis, impetigo, porrigo, &c.: it may also be employed simply as a counter-irritant. The tincture of iodine, or the iodine-paint, F. 89, should be applied by means of a camel's-hair pencil, and repeated daily until the cuticle peels off; or either of the officinal ointments—the iodide of mercury, iodide of lead, or compound iodine—may be gently rubbed into the skin of the neck, abdomen, &c.—F. 90. Iodine baths, also, have been extensively used by Lugol and others in the treatment of scrofula; but their efficacy is doubtful. If resorted to, they must be employed with discernment.—F. 91.

Iodine alone should never be administered to children: the most approved form, both for internal and external use, is in conjunction with *iodide of potassium*, forming what is called ioduretted iodide of potassium; or the iodide should be prescribed by itself in doses varying from gr. ¼ to gr. j., thrice daily, its effects being analogous to those of iodine; or where it is desirable to administer a tonic and alterative combined, as in many strumous affections of the glandular system, the iodide of iron may be ordered.—F. 38, 39, 40, &c.

The following table shows the strength of the different preparations of this drug:—

		Of Iodine.
Tinctura Iodinii (Phar. Dub.) . .	contains	gr. v. in ʒj.
Tinctura Iodinii Composita . . .	,,	gr. iss. in ʒj.
Liquor Potassii Iodidi Compositus .	,,	gr. j. in ℥iv.
Unguentum Iodinii Compositum . .	,,	gr. v. in ʒiij.
		Of Iodide of Iron.
Syrupus Ferri Iodidi	,,	gr. j. in ♏xij.

SECTION XII.—STIMULANTS AND TONICS.

Tonics are agents which gradually and insensibly increase the tone and power of the system: stimulants, on the other hand, rapidly excite action, without increasing the real strength. Tonics give power to the nervous system to generate or secrete the nervous influence by which the whole frame is strengthened: stimulants give rise to excitement, by promoting the extrication and expenditure of nervous influence, and thus increasing the action of the heart: but excitement is not strength; on the contrary, it leads to exhaustion.[*] Stimulants sometimes act indirectly as tonics by exciting the nervous system, and thus temporarily imparting power to the digestive organs; so that stimulants, with good diet, may in this way become valuable tonics. Many tonics—as the pure vegetable bitters—on the other hand, chiefly owe their value to their stimulating action on the stomach; through this means exercising an important influence on the system at large, by improving the tone of the digestive organs. Again, some agents possess a twofold power, containing both a stimulating and tonic principle, as cascarilla, chamomile, &c.

Stimulants are divided into two classes — general or diffusible, and specific stimulants. In the first division we have many vegetable substances, which owe their stimulant power to an essential oil, as camphor, æther, and ammonia; and alcoholic fluids, as wine, beer, &c.: while in the second section are, strictly speaking, a very large number of medicines, many of which have been classified under other designations, as purgatives, expectorants, &c. As examples of these agents, it is only necessary to mention terebinthinate medicines, which stimulate the bronchial and pulmonary mucous membrane; preparations of cantharides, which act on the mucous lining of the genito-urinary organs; and the alkaloid of the strychnos nux-vomica, which excites the excito-motory functions of the spinal cord. We employ stimulants to remove depression, exhaustion, and debility; to correct special nervous states due to debility; to promote convalescence after acute disease; and to excite certain secretions. They are generally improper in plethoric states, or in the early stages of acute inflammatory conditions, and in acute hæmorrhages accompanied with fever; and they should never be administered unnecessarily—as they often are by nurses—to infants and young children, since they readily induce excitement and subsequent depression.

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[*] Billing's *Principles of Medicine.* 5th ed., pp. 79, 95, &c. London, 1849.

Tonics may be arranged in three sections. In the first class are the pure vegetable astringents, as gallic acid, oak-bark, catechu, kino, logwood, &c.; in the second, the bitter tonics, as quassia, gentian, calumba, cascarilla, hops, taraxacum, rhubarb, aloes, willow-bark, and cinchona; and in the third, the mineral tonics, including zinc, iron, copper, arsenic, alum, and the mineral acids. Tonics are indicated in cases of atony or debility, in anæmia, in convalescence from acute diseases, in many convulsive and neuralgic affections, and in some forms of dyspepsia. Under their judicious use the appetite increases, the pulse becomes stronger, the muscular strength greater, and the soft solids firmer. As a consequence, the functions are all more energetically performed, and there is a greater power of endurance.

1. AMMONIA is a valuable diffusible stimulant, acting promptly and without affecting the head, as happens with alcoholic drinks. In the latter stages of fevers, in some pulmonary affections as chronic bronchitis, in exhaustion from protracted disease or from treatment of a too lowering nature, it is especially indicated. The *sesquicarbonate of ammonia* may be given, in doses of gr. ss. to gr. iij., dissolved in some aromatic water, where an antacid stimulant is required; or the *aromatic spirit of ammonia*, ♏ij. to ♏v., may be exhibited in milk, or in any simple infusion, when the vital powers are depressed, or when the infant is troubled with flatulent colic, &c.—F. 27, 52, 54, 56, 67, &c.

2. ÆTHER.—Sulphuric æther is the product of the distillation of a mixture of rectified spirit and sulphuric acid. Its

vapour is powerfully anæsthetic, but less so than chloroform: hence it is sometimes used to narcotise children, though its powerful odour—which to some persons is very unpleasant—is an objection to it.

The *Compound Spirit of Æther*—a combination of sulphuric æther, rectified spirit, and ethereal oil—is a good diffusible stimulant and anti-spasmodic; being especially useful in flatulence, hiccough, low fevers, and spasmodic affections. It may be given in doses of ♏ij. to ♏x. or xv., and is most efficacious combined with other remedies.—F. 55, 66, 82, &c.

3. Oleum Terebinthinæ—obtained by the distillation of the turpentine of various species of pinus and abies—is a good general stimulant for children; the administration of one or two drops beaten up in milk, or in honey and barley-water, or with the yolk of an egg, sufficing to remove depression, and to quickly relieve flatulence or spasm. It is valuable sometimes in protracted diarrhœa, and it has also efficacious anthelmintic powers.—F. 43, 50, and 61.

4. Cinchona.—All the varieties of cinchona bark are tonic, astringent, and antiperiodic. Either of them may be used in cases of urgent weakness, where it is necessary to make a sudden impression; in all cases of debility unaccompanied by inflammation of the alimentary canal; and in diseases which assume a periodic character. Dose: of powdered cinchona, from gr. ii. to gr. xv.; of the decoction or infusion, ʒi. to ʒss.; of the tincture or compound tincture ♏v. to ♏xx. or xxx. F. 37, 59, and 60. The advantages of the *disulphate of quinine* are that it is more easily administered from the dose being small, and that it is frequently better retained on the stomach. It has been found especially beneficial in infantile erysipelas, in sloughing phagedena, in cancrum oris, in strumous ophthalmia, and in periodical affections. It is often advantageously prescribed along with the mineral acids, at the sequel of remittent fevers; in malignant scarlatina, after the stage of excitement; and in purpura and pemphigus. In the advanced stage of hooping-cough, where the pulmonic irritation is dependent on debility, the combination of quinine and ipecacuanha has proved serviceable.* From gr. ¼ to gr. ½, or gr. j., may be

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* Dr. Ure's *Materia Medica, adapted to the Diseases of Infancy*, p. 158. London, 1839.

given twice or thrice daily,' in powder or in solution.—F. 44, 63, 64, &c.

5. FERRUM.—The various salts of iron act as tonics almost entirely by increasing the quantity, and improving the quality of the blood corpuscles. Under their use, the appetite becomes greater, the digestion is improved, the pulse increases in frequency and fulness, flesh is gained, and the general strength is augmented. These changes occur slowly and gradually; but the improvement is more permanent than that derived from any other tonic.

The use of iron is indicated in all cases where there appears to be a decrease in the proportion of the blood globules; and hence more particularly in general debility, in anæmia, and especially in the cachectic diseases of strumous or tuberculous children. That this agent will prevent the development of tubercle seems probable from M. Coster's experiments. This gentleman placed a number of rabbits, dogs, and other animals in a cold, damp, dark, and ill-ventilated cellar, where they were incapable of moving; he fed some on ordinary food, and others on bread containing half an ounce of the sesquioxide of iron in each pound. Those fed on the ordinary food—with one or two exceptions—became tuberculous; but not one of the number that had lived on the ferruginous bread presented a trace of tubercle.* Most of the ferruginous compounds may be administered to children; but my favourite preparations are —the *sesquioxide* in doses of two to ten grains, the *ammonio-citrate* in the same proportion, and the *potassio-tartrate* in doses of five grains to one scruple.—F. 40, 48, 64, 65, 72, &c.

6. OLEUM MORRHUÆ.—Cod-liver oil—obtained from the livers of several species of Gadus—has long been held in high estimation in Germany and Holland for the treatment of strumous and rheumatic affections. In the present day, it is everywhere employed, with more or less success, in a considerable number of diseases; those in which it is most valuable being phthisis, all forms of scrofula, and chronic rheumatism.

There are three varieties of this oil met with in commerce; viz., the pale, the light-brown, and the dark-brown. From the various analyses which have been made, this oil seems to be composed of oleic acid, with gaduin and two other peculiar matters; margaric, butyric, acetic, bilifellinic, phosphoric, and sulphuric acids; glycerine (?); fellinic and cholinic acids, with small quantities of oleine, margarine, and bilifulvine; a peculiar matter soluble in alcohol; a peculiar matter insoluble in æther, alcohol, and water; iodine; chlorine, with a small quantity of bromine, phosphorus, lime, magnesia, and soda. The pale oil is to be preferred to the darker kinds for children, since it is more easily digested, produces less nausea, and contains none of those products of decomposition found in the latter. All the varieties increase the solids of the blood, especially that portion estimated as blood globules: the fibrin is probably diminished.

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* *Bulletin de l'Académie de Médecine.* Paris, Jan. 31, 1840.

In administering cod-liver oil to children, I usually commence with half a teaspoonful twice daily, floating it on some pleasant-flavoured liquid, as diluted orange-wine, or the compound infusion of orange-peel, or merely on a little syrup acidulated with a few drops of lemon-juice. If desired, other medicines—as iron, quinine, iodine, &c.—may be combined with it; though, in prescribing for children, this practice is usually open to objection. Lastly, where the oil is not well borne by the stomach, it may often be advantageously introduced into the system by free cutaneous inunction, or by resort to the use of enemata.

CHAPTER IV.

THE MANAGEMENT AND EDUCATION OF CHILDREN.

SECTION I.—MANAGEMENT OF THE INFANT AT BIRTH.

The most striking picture of perfect helplessness and weakness that can possibly be imagined, is exhibited by the infant at birth. Incapable of making any regulated movements, or of employing its organs in any way, it requires assistance of every kind; and if left to itself quickly perishes. To learn the nature of the assistance demanded, let us imagine that a new-born child has just been placed in our hands; that the accoucheur has tied and divided the umbilical cord about two or three inches from the navel, has removed the mucus from the lips and mouth to prevent any obstruction to respiration, and has satisfied himself that the child is apparently healthy and well formed.

The first point which will be forced upon our attention will be, that the new state of existence is by no means an agreeable one; as the child, by its loud cries, will generally try to prove. Nor is this surprising, when we consider that an abrupt transition has been made from a state of unconscious repose, in a bland fluid at a temperature of 98° Fah., to the rude contact of rough cloths and flannels, and the comparatively cold temperature of air only heated to about 70°. The sensitiveness of the infant's nervous system is, however, its safeguard; the stimulus of the atmospheric air applied to the extremities of the cutaneous nerves being probably the cause of the first inspiration;* while the act of crying is in itself beneficial, since it contributes to the perfect filling of the pulmonary air-cells. The infant thus begins to breathe, and the blood commences its circulation through the lungs in order that it may be duly oxygenated.

The function of respiration being perfectly established, any further exposure to cold will not only be unnecessary but injurious. Hence we proceed to envelope the infant in warm, soft flannel, and then to place it in the lap of a nurse, seated near a good fire. "Instinct," says Dr. W. F. Edwards, "leads mothers to keep their infants warm; though philosophers, by more or less specious reasoning, have, at different times, and in different countries, induced them to abandon this guide, by persuading them that external cold would fortify the constitutions of their children, as it does those of adults."*

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* This explanation—now very generally admitted by physiologists—was first offered, I believe, by Dr. F. H. Ramsbotham, who says—"Dissection teaches us that the cutaneous nerves communicate most freely with each other, and that a large extent of skin is supplied from the same source as the diaphragm, the chief power employed in respiration. The *phrenic*, or *internal respiratory nerve*, is derived from the second, third, and fourth cervical; and large branches from both the second and third supply the back part of the head, the jaw, neck, shoulders, arm, and the upper part of the back and chest. Thus, then, the diaphragm, and the integuments of the upper part of the body—parts remote in situation—*are connected together by the direct sympathy of nervous communication*; and it would be an inevitable consequence, that any stimulation applied to the extremities of one set of branches supplying the skin, would be propagated to the other extremities of the same nerve ramifying on the diaphragm. The consequence of that stimulation would be the contraction of that muscle; by that contraction its convexity towards the thorax would be destroyed; it would be drawn into the form of an inclined plane; the capacity of the chest would be increased; and the external air would rush through the trachea into the pulmonary cells to fill the void thus created."—*Obstetric Medicine and Surgery*, p. 730. 4th ed. London, 1856.

The experiments of the same physiologist also teach us that the heat of the mature infant at birth varies from 93° to 95° Fah., being from 3° to 5° less than that of the adult; while the heat of infants born prematurely is still less. Supposing that the infant appears healthy and active, it may be forthwith washed, placing its body and extremities in a basin of warm water, while the head rests on the nurse's left arm; the white, unctuous, tenacious substance, denominated the *vernix caseosa*, being gently removed with a fine sponge. When any difficulty is experienced in removing this matter, it should be allowed to remain rather than use any force; for it will readily scale off in a day or two, or come away in subsequent washings. If soap be used, that known as glycerine soap will be the least injurious. The washing being finished, the body is to be dried with a warm, soft napkin; and a little violet-powder—powdered starch scented—may then be lightly dusted over the surface, especially about the axillæ, groins, knees, &c. The cut extremity of the cord is to be examined, to ascertain that there is no secondary hæmorrhage calling for the application of a second ligature; and the cord is then to be enveloped in a small piece of rag, and laid flat upon the abdomen, in which position it is retained by a thin flannel roller, about four inches wide, gently applied once or twice round the body. The infant is then dressed in long shirts, petticoats, bed-gowns, &c., made of light, soft, warm materials, and fastened by strings, instead of pins; a muslin or flannel cap is put on its head; and finally it is wrapped in a loose flannel shawl, and carried to its mother. With regard to premature or very weakly children, however, I generally direct that they shall not be dressed until the end of several hours; keeping them in the meantime in a cradle near the fire, with the body and limbs thoroughly enveloped in cotton wool.

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* *De l'Influence des Agens Physiques sur la Vie.* Paris, 1824.

It was formerly the practice, as soon as the infant was dressed, to administer to it a dose of some mild purgative, such as manna, castor-oil, butter and honey, &c.; — the speedy expulsion of the meconium having been deemed a matter of importance. This vicious proceeding, however, ought never to be encouraged; since it is not only injurious, but unnecessary, for the mechanical distension produced by the infant's first food will generally cause the bowels to act, even if the colostrum—the milk first secreted by the mother—be not itself endowed with purgative properties. Moreover, it is the first step towards that pernicious system of domestic drugging which I have already reprobated, and which no medical man should in any degree sanction.

SECTION II.—FOOD OF INFANTS.

The chief alimentary principles by which all the higher animals are nourished, and of which their bodies are essentially constituted, may be divided into four great groups,—viz., the *aqueous*, the *saccharine*, the *albuminous*, and the *oleaginous*.* These principles, without any alteration in their essential composition, are capable of assuming an infinite variety of modified forms, as well as of combining with each other, and of being transmuted into new principles.

From the essential identity between the alimentary matters by which animals are nourished, and the composition of their own bodies, it follows that in order to keep the body in health the diet must be complete; *i. e.*, it must contain more or less of all the four staminal principles. Now the only material throughout the range of organization that is designed and prepared by Nature expressly as food, is milk; in which we find a model of what an alimentary substance should be. "Every sort of milk that is known," says Dr. Prout, "is a mixture of the four staminal principles we have described; in other words, milk always contains, besides *water*, a *saccharine* principle; a *caseous*, or strictly speaking, an *albuminous* principle; and an *oily* principle. Though in the milk of different animals the three latter of these staminal principles exist in endless modified forms, and in very different proportions, yet neither of them is at present known to be entirely wanting in the milk of any animal.*

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* Dr. Prout, *On Stomach and Renal Diseases*, pp. 454 to 465. 5th ed. London, 1848.

From eighty-nine analyses of the milk of women which have been made by MM. Vernois and Becquerel, the following results have been obtained:—†

	Maximum.	Minimum.	Mean.
Specific gravity	1046·18	1025·16	1032·67
Water	999·98	832·30	889·08
Solid constituents	147·70	83·33	110·92
Sugar of milk	59·55	35·22	43·63
Casein and extractive matters .	70·92	19·32	39·24
Butter	56·42	6·66	26·66
Incombustible salts.	3·38	0·55	1·38

Thus it appears that this secretion is liable to great individual varieties, dependent upon a great number of different circumstances, and that no analysis can be quoted which will apply to all cases. The foregoing analyses, however, are sufficient to give very good general notions on the subject.

There can be no doubt then that milk, and milk alone, is the proper aliment for infants during the first few months after birth; and that in all cases where it is possible this nourishment should be afforded by the mother herself, who should be very jealous of transferring her privilege to a stranger, and of so risking the loss of any portion of her offspring's love. As regards the time after delivery at which the child should be first presented to the breast, authorities differ; some thinking that ten or twelve hours should elapse, so that the mother may recover from her fatigue; others, that no time should be lost after the infant is dressed, and the mother made dry and comfortable. The latter is the plan which I adopt in my own practice; for, without considering whether such a proceeding is advantageous—it

* *Opus cit.*, p. 464.

† Bouchut. *Opus cit.*, p. 19.

certainly is not injurious—to the infant, I am quite positive that it is of great benefit to the mother; inasmuch as the early sucking of the child not only gives a proper form to the nipple and facilitates the flow of milk, but the irritation of the mammæ tends, by reflex action, to contract the uterus, and thus to materially diminish the risk of secondary hæmorrhage.

Unfortunately, however, it is not every mother who is capable of suckling her infant; and the question arises—How are we to tell when such is the case? The chief conditions which disqualify a mother for the office of nurse are:—An extremely sensitive and excitable temperament; severe constitutional deterioration from any cause; a strong predisposition, either hereditary or acquired, to scrofula, tubercle, cancer, syphilis, epilepsy, or insanity; and the existence of any severe disease, as puerperal mania, puerperal fever, &c. In addition to these circumstances, the mother may be prevented from fulfilling her duties owing to the secretion of milk being so scanty as to be almost useless; or the secretion may be abundant, but it may be poor and watery, and deficient in milk globules; or, lastly, the nipples may be so flattened and buried in the mammæ, that they cannot be laid hold of.

Supposing then, from any of these causes, that the mother is rendered incapable of performing the duty which naturally devolves upon her, the infant must either be reared by a wet-nurse, or be "brought up by hand." The principal requisites for a good wet-nurse are—that she be between twenty and thirty years of age; of active and temperate habits; of a robust and healthy constitution; of a quiet, patient, cheerful disposition; exempt from any scrofulous or syphilitic taint; complexion fresh and clear, and skin free from eruptions; gums red and firm; teeth sound; tongue clean, and breath sweet; breasts firm, vascular, and well-formed, with well-developed nipples; milk abundant, rather thin, of a bluish-white colour, sweet, and throwing up plenty of cream when allowed to stand;* and, lastly, it will be well if the date of her labour does not differ materially from that of the parent whose place she is to fill. It is thought by many that the milk of fair women is inferior in quality to that of dark. L'Heritier selected two females—one a blonde, the other a brunette—each twenty-two years of age, and got them to adopt the same diet and mode of life. The most marked of his various analyses is shown in the following table:—

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* "Nurses who have not a good supply of milk will occasionally be found to adopt a practice commonly employed with milch cows when

MILK of WOMEN of Different Temperaments.*

Constituents.	The Blonde.	The Brunette.
Water	892·00	853·30
Butter	35·50	54·80
Casein	10·00	16·20
Sugar of Milk .	58·50	71·20
Salts	4·00	4·50
	1000·00	1000·00

In order to keep the wet-nurse in good health she must live regularly on simple, nourishing, and digestible food, and much in the way she has been accustomed to; she must avoid overloading the stomach, and so inducing dyspepsia; she may drink beer or wine in moderation, when she has previously been in the habit of doing so, though if she can be persuaded to try milk, or milk and water, it will be better; she must be scrupulously attentive to cleanliness; and she should daily take moderate exercise in the open air. If the catamenia appear while she is nursing, or if conception takes place, the infant will probably not thrive as it ought, owing to the diminution of the lacteal secretion; and a fresh nurse will generally have to be procured. Moreover, when the

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brought to market, and called by the cattle dealers *stocking*; that is, they allow the milk to accumulate in their breasts for several hours before presenting themselves for examination, so as to cause the examiner to believe that they are very abundantly provided. Young practitioners should be especially on their guard against this deception." Note to Maunsell and Evanson. *Opus cit.*, p. 50.

* *Human Physiology.* By J. W. Draper, M.D., &c., p. 227. New York, 1856.

nurse suckles a child of her own along with the nursling, constant care must be taken to ascertain that the supply of milk is sufficient for the wants of both. Suckling from a suppurating breast is bad both for infant and nurse. The only sure test of the goodness of the nurse is the condition of the child: if the latter, consequently, does not thrive, but becomes thin and puny, feverish and thirsty, sick, constipated, irritable, and restless, the nurse should be at once changed.

In cases where the mother is unable to nourish the infant, and a wet-nurse cannot be procured, our only resource is to rear the child by careful artificial feeding. The food usually resorted to is the milk of the cow, as it is less expensive and more readily procured than the milk of any other animal. It differs from human milk in containing less of the oleaginous and saccharine principles, but more of the albuminous; hence it should be slightly sweetened, and diluted with one-third part of plain water, or of barley-water. When expense is no object, however, or when the infant's health absolutely demands it, we must resort to some food which bears a stronger resemblance to human milk; and, fortunately, in asses' milk we find what is required. The subjoined table shows the chief differences between the milk of various domestic animals and that of woman:—

Composition of the Milk in Man and in various Animals.*

	Specific Gravity.	1000 Parts contain		The Solid Components consist of			
		Fluid.	Solids.	Sugar.	Butter.	Casein and Extractive Matters.	Salts.
Man . .	1032·67	889·08	110·92	43·64	26·66	39·24	1·38
Cow . .	1033·38	864·06	135·94	38·03	36·12	55·15	6·64
Ass . .	1034·57	890·12	109·88	50·46	18·53	35·65	5·24
Goat . .	1033·53	844·90	155·10	36·91	56·87	55·14	6·18
Ewe . .	1040·98	832·32	167·68	39·43	54·31	69·78	7·16

Occasionally, asses' milk gives rise to diarrhœa: this is easily checked by mixing with it one-fourth part of lime-water. Whether we choose the milk of the cow, or of the ass, or of the goat which often agrees well, it should be warmed to about 96° Fah., and administered by means of a feeding-bottle, having a nipple formed of vulcanized india-rubber, or chamois leather, or of a calf's teat, or of cork; for the exertion of sucking aids the development of the muscles of the mouth, and, by promoting the secretion of saliva, helps digestion.* Moreover, whether the infant be reared by the mother, or by a wet-nurse, or by artificial feeding, it should be kept entirely, if possible, to the food first chosen, until after the seventh or eighth month, when the teeth begin to appear. It should also be regularly nursed or fed during the first two or three weeks of life about every two hours through the day, and every three or four hours during the night; the intervals being gradually increased until they reach three or four hours in the day, and six or eight at night. Thus the nurse will be refreshed, and her patience and moral strength recruited, by some hours of uninterrupted sleep; which is with difficulty obtained by those who have once got into the habit of offering the child the breast whenever it cries or shows any appearance of uneasiness.

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* *Du Lait chez la Femme, &c.*, p. 167, par MM. Vernois et Becquerel. Paris, 1853.

As regards the quantity of milk which the infant requires each time it is nursed, it can only be roughly stated that it varies from one ounce and a half to six or seven ounces: less than the former being insufficient for the purposes of nutrition, while more than the latter will probably induce vomiting.

SECTION III.—WEANING.

The proper time for weaning healthy children is between the ninth and twelfth month, when Nature—by providing teeth, and increasing the development and muscularity of the stomach—indicates that a more solid diet is required. The change, however, is not to be made abruptly; and hence, when the first teeth begin to appear, at the end of the seventh or eighth month, a little supplementary food may be very gradually allowed—such as pure, undiluted cow's milk, thin arrowroot, well-boiled gruel, or beef-tea—while, at the same time, the quantity of nourishment derived from the mother is slowly diminished. The infant will thus daily become reconciled to the almost imperceptible alteration in its diet; while the mother's lacteal secretion will by degrees diminish as the demand for it lessens, until it ceases entirely by the time the child is one year old.

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* The best form of bottle with which I am acquainted is that sold by most druggists under the name of the *British Feeding Bottle*. Amongst its advantages are the following. It can be placed in any position without the food running out; while the infant is sucking, the supply of food can be regulated or stopped without taking the teat from the mouth; there is no possibility of the infant drawing in air with its food; and the whole is simple in structure, and easily kept clean.

Although there is but little risk of women moving in the upper classes of society unduly prolonging the period of lactation, yet this is not the case with the lower orders; who often continue suckling for two years or more, in order—as they think—to avoid pregnancy. That this result is not always obtained we now well know; for, though there is doubtless some functional antagonism between the mammæ and ovaria, yet the influence of the latter would seem after a time to preponderate, or otherwise we should not find—as Mr. Roberton's researches prove*—that more than fifty per cent. of the lower classes of the women in Manchester become pregnant during the performance of lactation. There are, of course, some cases of delicate children where weaning may well be delayed for two, three, or four months after the proper time, provided the mother's health continues perfect; but if the latter begins to fail, or the supply of milk to diminish, nursing must be abandoned.

For some time after weaning the principal nourishment should consist of semi-fluid substances; for it must be remembered that the digestive organs are still weak, and that the stomach is easily oppressed and disordered. Of the various kinds of food in daily use, the best are—arrowroot, made with milk and water; thin gruel, made from groats or prepared barley, strained and sweetened; plain biscuits, or "tops and bottoms," soaked in boiling water, strained through a sieve, and then mixed with sweetened milk; milk and isinglass; or sago, thoroughly boiled in weak beef-tea, with the addition of a little milk. Dr. Churchill speaks very highly of "bread jelly," which he orders to be prepared thus:—A quantity of the soft part of a loaf is broken up, covered with boiling water, and allowed to soak for some time; the water—containing all the noxious matters used in making the bread—is then strained off completely and fresh water added, and the whole placed on the fire and allowed to boil slowly for some time, until it becomes smooth; the water is then pressed out, and the bread on cooling forms a thick jelly, a portion of which is to be mixed with milk, or water and sugar, for use as it is wanted.* Lastly, Dr. Gumprecht, of Hamburg, in the year 1849, drew the attention of the profession to a novel kind of food, that will often be found useful, viz., carrot-pap, which is to be thus made. An ounce of finely-scraped full-grown carrot is to be mixed with two cupfuls of cold soft water, and allowed to stand for twelve hours. The fluid portion is then to be strained off; that which remains being pressed, to yield as much as possible. This fluid is then to be mixed with the proper quantity of biscuit-powder, or bruised crust of bread, or arrowroot, &c., and the pap placed over a slow fire until it begins to bubble; care being taken that the heating be not pushed so far as to cause boiling, or the albumen will coagulate. After its removal from the fire, it is to be sweetened; and thus is formed a most nourishing, agreeable pap, the use of which is only contra-indicated by any tendency to diarrhœa. Dr. Gumprecht states that, by mixing the carrot-juice with biscuit, crust of bread, or arrowroot, and sugar, we obtain all the nutritious elements required, viz., albumen, gluten, starch, sugar, fat, and the phosphates of lime and magnesia.†

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* *Essays and Notes on the Physiology and Diseases of Women.* London, 1851.

As the child grows older and cuts all its first teeth, the diet must be further extended; and bread and milk, oatmeal and milk made into porridge, nourishing broths, light puddings, eggs lightly boiled, well-cooked vegetables, white fish, and fresh animal food—especially chicken or mutton—may be judiciously allowed. Fresh ripe fruit, in moderation, should be given; plain light pastry, simple cakes, and biscuits seldom do any harm; while the child's notorious love of sugar may be judiciously indulged, unless flatulence or acidity arise. Until, however, our confectioners cease to colour their bon-bons with poisons, parents must be advised to have their sweets made at home. As a general rule, too, tea and coffee, wine and beer, should be interdicted; milk, or sweetened milk and water, and pure spring water, or toast and water, being much more wholesome.

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* *The Diseases of Children*, p. 31. Dublin, 1850.

† *British and Foreign Medico-Chirurgical Review.* Vol. vi., p. 138. London, 1850.

SECTON IV.—CLEANLINESS AND CLOTHING.

Cleanliness is of the utmost importance to health at every period of life, but especially so during infancy and childhood; for if the manifold and important functions of the skin be then imperfectly performed, general constitutional disturbance quickly ensues. Hence every care must be taken by frequent and thorough ablutions, gentle frictions, and clean soft clothing to maintain the healthy action of the cutaneous surface.*

The safest and most convenient way of washing the infant is to immerse its body in a large tub or basin of warm water, while the head is supported by the hand and arm of the nurse; at the same time the whole surface of the body—especially about the scalp, joints, and folds of the skin—is to be well rubbed with a soft sponge, with or without the glycerine soap, so as to remove all offensive matters. After having been in the water for a few minutes, the child is to be taken out, quickly and thoroughly dried, and to have well-aired clothing at once put on. This bath must be used daily, the best time for it being in the morning as soon as the infant is taken out of its cradle to be dressed for the day. The water should be at first comfortably warm—*i. e.*, 90° to 96° Fah.; but if the season of the year will permit, it will in some cases be found advantageous to gradually diminish the temperature until it is reduced to 85° or 80°. The practice of using cold water for young infants is quite indefensible, as it is well known to have given rise to serious ill effects. Some physicians recommend that two baths should be employed in the day, the water of the morning bath being tepid, and that of the evening warm. In several cases where there has been great irritability, restlessness, and sleeplessness, I have ordered this plan to be pursued with manifest advantage.

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* "Let me here be permitted," says Hufeland, "to call the attention of my readers to an incongruity, which is not the only one of the kind in human life. The most ignorant person is convinced that proper care of the skin is indispensably necessary for the existence and well-being of horses and various animals. The groom often denies himself sleep, and other gratifications, that he may curry and dress his horses sufficiently. If they become meagre and weak, the first reflection is, whether there may not have been some neglect or want of care in regard to combing them. Such a simple idea, however, never occurs to him in respect to his child. If it grow feeble and sickly; if it pine away and is afflicted with disease, the consequence of dirt, he thinks rather of witchcraft and other absurdities than of the real cause—neglecting to keep the skin pure and clean. Since we show so much prudence and intelligence in regard to animals, why not in regard to men."—*Art of Prolonging Life.* Edited by Erasmus Wilson, p. 226. London, 1853.

During the first few days of life care must be taken not to disturb the remains of the umbilical cord during washing. In ordinary cases it dries up and falls off between the fifth and seventh days, leaving a small ulceration at the navel, which quickly heals.

Another important element of cleanliness during infancy is the speedy removal of all the damp and soiled clothing which results from the frequent and involuntary discharges from the bladder and bowels. At the same time, also, the nates and groins are to be well washed with tepid water, gently dried, and lightly dusted with finely-powdered starch, or prepared calamine, or oxide of zinc. The application of any powder is by some objected to; but it appears to me desirable rather to encourage its use, since it prevents excoriation, and is very soothing to the delicate and sensitive skin.

The clothing of infants and children—let physicians say what they may—will always be modified by fashion and the various caprices of parents: but so long as it is loose, simple, scrupulously clean, warm, soft, capable of being fastened without the use of pins, and not too heavy, we need not be very particular as to its shape. The long flowing clothes in which infants are generally dressed for the first five or six months seem at first sight rather absurd; but without doing any harm, they certainly protect the legs and feet and lower parts of the body from cold air and draughts.

With regard to the material, some allowance must be made for the season of the year; but I think that, as a rule, cotton under-clothing is preferable to linen in this variable climate, since it is a better radiator and worse conductor of heat, and does not absorb moisture to the same amount. Its only disadvantage is that it is more apt to excite irritation. For delicate children it is necessary to order thin flannel to be worn next the skin during the day, but not at night; while in a few instances I have seen good results from the use of an under-waistcoat, and even drawers, of chamois leather. In all cases the night-clothes are to be looser and less warm than those of the day; moreover, every article should be changed before putting the infant to rest in the evening.

A cap is seldom required, especially in the nursery; but if one is worn, it should be thin and light. The maxim which says, "Keep the head cool and the feet warm," should be borne in mind.

As children grow older, it is often thought necessary to strengthen or harden them by exposing them unnecessarily to cold, and by putting them into very short thin clothes, with light drawers, bare necks and arms, &c. This is a great mistake, however, as all must acknowledge who remember that the power of resisting cold in early life is very feeble. Hence, we should always insist that the dress be warm; large enough to clothe the whole person, including the chest, neck, and arms; and sufficiently loose to allow of perfect freedom of motion.* There are some robust children, whose constitutional powers will enable them to bear up against the hardening system with all its cruelty; but such are not to be brought forward in favour of its beneficial effects. Rather, I believe, they merely prove that their strength was sufficient to enable them to bear that which all medical men know has proved fatal to numbers; and that they have grown up healthy in spite of the treatment, not in consequence of it.

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* "Only fools and beggars suffer from cold," says Boerhaave, "the latter not being able to procure sufficient clothes, the former not having the sense to wear them." Another aphorism of the same author was, "that our winter-clothing should be put off on Midsummer's day, and put on again the day after." This rule was intended to apply to the climate of Holland, but may be remembered, if not wholly acted on, in Britain.—See Erasmus Wilson *On Healthy Skin.* 5th ed., p. 130., London, 1856.

SECTION V.—EXERCISE AND SLEEP.

Few infants acquire sufficient strength to support the back in an upright position before the end of the fourth month; so that until then they should be carried about in a reclining posture on the nurse's arm, in such a way as to afford entire support to the body and head. At this period their bones and limbs are very delicate, so that they must not be shaken about roughly, nor tossed in the air, nor rocked too violently. As they grow older they begin to make efforts to raise themselves; and seem to experience satisfaction from being occasionally placed in a sitting position, or from being laid on the bed or on the ground and allowed to roll and kick about at their pleasure. These movements not only afford amusement, but they act very beneficially by calling the numerous muscles of the body into action, and so increasing their strength and bulk; as will be at once apparent if an infant which has been allowed this freedom be compared with one who has been doomed to preternatural inaction by being swathed in stiff clothing. Towards the end of the ninth or tenth month most infants may be taught to crawl about on their hands and feet; and a little later, unless very feeble, attempts may be made to teach them to walk by supporting them under the arms, guarding them against falls, and encouraging them to move from one chair to another. Such children as present a favourable condition of development can, as a general rule, walk freely before the end of the fifteenth month; while of those who are badly developed, the majority will only begin to walk after this date.

We need not wait, however, for infants to be able to walk before exposing them to the wholesome and invigorating influence of the open air; for after the first three or four weeks, their health will be much improved by their being carried out daily for one or two hours when the weather is favourable. M. Lévy well remarks that the want of fresh air is as detrimental to the nurse as to the infant; and that the mother, consequently, should insist on sending out both nurse and infant as much as the weather and season will permit, and be on her guard against encouraging that indolence which nurses are rather apt to indulge in. The same author, when inculcating the advantages arising from exposure to the free air and light of open day, illustrates their influence by observing that the number of Cretins in the Valais is diminishing since the women have adopted the practice of removing from the humid and sunless air of the valleys, and residing during pregnancy on the more exposed and cheerful heights.* When the child has fully acquired the power of walking alone, he should be allowed the most perfect freedom of exercise, especially in the open air during the middle of the day. I need hardly say that in the winter and spring months precautions will be necessary to avoid catarrhal affections; but if undue exposure to bad weather be guarded against, if the nurse walk quickly instead of loitering about with her acquaintances, and if the children are suitably clad in warm, well-made clothing, there will be but little risk. At a later period, active games in the field or garden, by exercising the limbs and exposing the body to the invigorating influence of the solar light, promote the growth and regular development of the whole frame; and parents cannot be better advised than by urging them to provide opportunity for such amusements by allowing the free use of a garden, and furnishing proper toys—as balls, hoops, kites, &c.

With respect to the quantity of exercise to be allowed—no general rule can be laid down other than that the dictates of Nature should be followed; and that when fatigue is experienced, rest should be allowed. Young infants require a great deal of repose—the first few weeks after birth being passed almost entirely in sleep, with the exception of the time occupied in satisfying the instinctive calls for food. As they gradually grow older, however, and as the strength increases, the periods of wakefulness grow longer; although it must always be remembered that throughout the whole period of childhood more sleep is required than in adult age. To permit of this, children should be put to bed early in the evening, so that they may enjoy a deep slumber for ten or twelve hours; while, until they are three years old, they must be allowed to recruit their strength by reposing for an hour or two in the middle of the day before dinner. In awaking a child, care should be taken to do so gradually and gently, otherwise much injurious excitement may be produced.

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* *Traité d'Hygiène publique et privée.* Vol. i., p. 592. Paris, 1844.

A young infant requires a warm soft couch for its repose, with sufficient covering to protect it from the least impression of cold. During the first few weeks it may be advantageous for it to sleep in the same bed with its mother, especially if the weather be cold: but after this time a cradle or cot should be used. Nothing is more distressing to an anxious mother, or more annoying to an impatient nurse than sleeplessness in her infant charge; and we must constantly be on the alert to prevent the baneful habit of resorting to laudanum, soothing syrups, and quack cordials, to force sleep. In the majority of cases we may be certain that when a healthy infant does not sleep, either its clothing is uncomfortable, or it is cold, or in pain from some removable cause—as the point of a pin being in contact with its body, or it has been over-fed, or fed on some improper food. If the removal of the cause does not suffice to induce sleep, a warm bath of a few minutes' duration will never fail to soothe, and will generally act as an excellent narcotic.

Most authors inculcate the importance of promptly training the child to habits of early rising; and provided these habits are enforced, not by curtailing the due proportion of sleep, but by making the child retire early to bed, and by teaching it to rise in the morning directly it awakes naturally, no objection can be offered. A story is current of Lord Mansfield, who himself lived to eighty-nine, that whenever very aged witnesses appeared in the court over which he so long presided, it was his wont to interrogate them as to their habits of life; and with the result that in no one habit was there any general concurrence, except in that of *early rising*. Anecdotes of this kind, however, are for the most part either untrue or exaggerated in degree. Early rising is doubtless in many ways favourable to health, but it cannot be taken as a guarantee for longevity. Even if this story were perfectly correct, it is more probable that the vigorous vitality in these instances maintained the habit, than that the habit maintained the vitality.*

SECTION VI.—THE NURSERY.

As the early years of childhood are mostly passed in the nursery, it cannot be unimportant to say a few words on the management and arrangement of this apartment. The first and most essential requisite in a nursery is, that its situation should be such that it may always command a due supply of dry, pure air; while if, in addition, a room with a southern aspect and a cheerful prospect can be obtained, so much the better. Remembering the important agency of light, we should take care that the windows are large to admit it freely, while no hangings or curtains ought to be permitted to exclude it. The room should also allow of its being easily kept warm, and, at the same time, of being thoroughly ventilated without exposing the inmates to draughts of cold air. A temperature of 66° will be found comfortable. A large room is preferable to a small one. According to Dr. W. F. Edwards' view, the advantages of large apartments are not merely to be referred to the greater purity of the air; but also to the slight agitation of the atmosphere, caused by the space being extended, producing a feeling of well-being, similar to the sensation experienced on breathing in the country. As a general rule, these advantages can be more readily obtained on the upper stories of a house than on the ground-floor; for in towns especially, the atmosphere improves the higher we ascend. Every one knows that the impure exhalations from drains and damp unhealthy soils, as well as the poisons from malarious districts, lie low, or, as Dr. Watson says, "love the ground;" as is readily proved by the circumstance, that travellers through fenny regions pass the night with comparative impunity in the upper rooms of an inn, whereas they would certainly suffer afterwards from intermittent fever if they slept on the ground-floor.

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* *Edinburgh Review*, January, 1857.

When the size of the house will admit of it, the day-nursery should be separate from the sleeping-room. In every case, however, care must be taken that the latter is not overcrowded, either by furniture, or especially by allowing too many nursery-maids and children to sleep in it. At least five hundred cubic feet of air, or a space equal to eight feet square, must be allowed for every child, if the laws of health are to be observed, and if all the evils which result from breathing a vitiated atmosphere are to be avoided.

With respect to the management of the nursery, I need only observe, that habits of order and cleanliness, as well as of regularity in regard to the meals, exercise, periods of rest during the day, and retirement for the night, should be attended to from the first. A really conscientious, kind, cheerful, and forbearing nurse, who is also clean and neat in her habits and person, is an invaluable acquisition, that should be duly encouraged and taken care of. And, lastly, every loving mother who wishes to early instil good thoughts into the minds of her children, and to have them grow up to be valuable members of society, will take care to spend daily a certain portion of her time in their company.

SECTION VII.—MORAL AND INTELLECTUAL TRAINING.

The most important points with regard to the physical education of young children having been discussed, it remains for me to offer a few observations on their moral and intellectual training. And I must here premise that this section has not been introduced without due consideration; for at first sight it may appear that the practitioner of medicine has but little to do with the mental education of the young. Such a view, however, must be incorrect, if my belief is just—that every medical man should be the *friend* of his patients. This observation must not be misunderstood. By a friend, I do not mean the boon-companion of an hour, or an associate to grace a dinner-table: but rather, the *alter ego;* one who can be consulted on many momentous questions; one who will be sought after when the heart is full of sorrow, and when acquaintances turn away. By a friend, I understand one who, on being asked for advice, will give his heartiest counsel; will endeavour to realise the position of him who seeks his aid; and assist and act in every way as he would wish to be done by. A friend should be generous, faithful, and honest; frank and open; and while true to his own conscientious opinions, he should yet be free from that illiberal or excessive self-love which gives birth to pride, prejudice, and jealousy. In a word, he should—in the true acceptation of the term—be a *gentleman;* in the acceptation which admits that though no amount of wealth can purchase this title, yet is it within the reach of the humblest artisan.

Supposing then that in the medical practitioner such a friend—or as near an approach to such as our imperfect nature will allow—is to be found, is it not most probable that he will be asked for an opinion as to the future intellectual training of the child whose ailments he has watched from birth, and as to whose welfare he feels a real interest. What is the constant theme upon which a young mother loves to dwell? is it not her infant? What subject can be of greater moment to a father than the future prosperity and happiness of his child? I believe, indeed, that the old Greeks gave expression to a true sentiment when they said, "that what made men citizens, patriots, heroes, was the love of wedded wife and child."

The grand rule for parents to adopt in educating their offspring, is to direct the training in harmony with the laws of Nature; or, in other words, with a due regard to the principles of physiology, so that the child may grow up with a sound mind in a healthy and vigorous body. To do this, the training must be commenced at a very early period; every step must be made slowly and deliberately; invaluable lessons are to be given without any appearance of teaching; and as the child's faculties become developed, so is its mental nourishment to be gradually made stronger and more suitable to the improvement manifested. The infant at birth possesses very little power of perception, many of its senses are imperfect, and its system is only, as it were, a rich soil waiting for cultivation. The ever-watchful parent will soon perceive manifestations of intelligence: "even at the early age of six weeks, when the infant is still a stranger to the world, and perceives external objects so indistinctly as to make no effort either to obtain or avoid them; he is, nevertheless, accessible to the influence of human expression. Although no material object possesses any attraction for him, sympathy, or the action of a feeling in his mind corresponding to the action of the same feeling in the mind of another, is already at work. A smiling air, a caressing accent, raises a smile on his lips; pleasing emotions already animate this little being, and we who recognise their expression are delighted in our turn. Who, then, has told this infant that a certain expression of the features indicates tenderness for him? How could he, to whom his own physiognomy is unknown, imitate that of another, unless a corresponding feeling in his own mind impressed the same characters on his features? That person near his cradle is, perhaps, not his nurse; perhaps she has only disturbed him, or subjected him to some unpleasant operation. No matter, she has smiled affectionately on him; he *feels* that he is loved, and he loves in return."* The mere soothing and gentle fondling of a mother, then, is no unimportant lesson, since it is the first step towards the proper cultivation of the affections; and hence, at this time, must be laid the foundation of that love which may, perhaps, do more to guide the future responsible being aright than many may imagine. As the perceptive faculties come fully into play, the fostering care of the parents, and the quiet influence of home, do their good work; until—as months pass on—the reasoning powers begin to be very gradually developed. At this time, the naturally cheerful and joyous dispositions of children are to be encouraged; kindness and gentleness are to be taught by example; good habits and noble feelings are to be cherished; generosity and self-denial gently inculcated; and, above all, prompt implicit obedience insisted upon. All this cannot be done, however, without forethought nor without those in charge of the little one learning to accommodate themselves to its powers, and, in some degree, to its disposition. Many trivial faults must be overlooked, strict nursery laws abolished, and care taken not to worry by an excess of careful management. The old lady who was asked by an over-anxious young mother as to what course should be pursued with regard to a child too rigorously disciplined, gave very good advice when she replied,—"I recommend, my dear, a little wholesome neglect."

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* *L'Education Progressive ou Etude du Cours de la Vie.* Par Mme. Necker de Saussure. Vol. i., p. 144. Paris, 1836.

A little child, three or four years of age, seems to possess an instinctive consciousness of its own weakness, and while relying on its guardians for its safety and well-being, is only too readily inclined to lavish all its love in return. At this interesting and engaging period, the young require very careful management; the most common error now committed being either *over-indulgence*, or *over-regulation*. In the first case the parents comply with all the whims of the child, allow his will to have unlimited sway, and are afraid of inflicting just and necessary punishment for fear of impairing the affections. The consequence is, that the child grows up spoilt, selfish, and unloving—for a spoilt child is seldom affectionate; moreover, he is generally unhappy, for the more his whims and caprices are gratified, the more his desires increase, until at last it becomes impossible to indulge them. In the second instance, the parent's inclinations are constantly substituted for the child's; every desire is thwarted; harsh severity is not unfrequently resorted to; and the affectionate and joyful feelings, so delightful to witness in the young, are crushed. Is it to be wondered at if such treatment leads to fretting, peevishness, and bad temper; or to a broken and desponding spirit? The following observations of Archbishop Whately are so pertinent, that I need not apologise for quoting them:—"Most carefully should we avoid the error which some parents, not (otherwise) deficient in good sense, commit, of imposing gratuitous restrictions and privations, and purposely inflicting needless disappointments, for the purpose of inuring children to the pains and troubles they will meet with in after life. Yes; be assured they *will* meet with quite *enough*, in every portion of life, including childhood, without your strewing their path with thorns of your own providing. And often enough you will have to limit their amusements for the sake of needful study, to restrain their appetites for the sake of health, to chastise them for faults, and in various ways to inflict pain or privations for the sake of avoiding some greater evils. Let this always be explained to them whenever it is possible to do so; and endeavour in all cases to make them look on the parent as never the *voluntary* giver of anything but good. To any hardships which they are convinced you inflict reluctantly, and to those which occur through the dispensation of the All-wise, they will more easily be trained to submit with a good grace, than to any gratuitous sufferings devised for them by fallible man. To raise hopes on purpose to produce disappointment, to give provocation merely to exercise the temper, and, in short, to inflict pain of any kind merely as a training for patience and fortitude—this is a kind of discipline which man should not presume to attempt. If such trials prove a discipline not so much of cheerful fortitude as of resentful aversion and suspicious distrust of the parent as a capricious tyrant, you will have only yourself to thank for the result."[*]

The business of formally instructing the intellect of all children, but especially of the precocious and delicate, must not be commenced too early: for with the mental development, as with the productions of the field, long experience has taught that late springs produce the most abundant harvests. At the same time guardians must not follow the plan of Rousseau, who regarded reading as the scourge of infancy, and who, therefore, would not allow his Emilius to learn a line by heart until he was twelve years old. At first, pictures and simple toys should alone be allowed to teach the appearance of external objects, and to establish a desire for information. Then, as the child reaches its sixth or seventh year, the forms of letters are to be pointed out; care being taken not to tire or disgust. The short-sighted policy which rapidly forces the juvenile mind, without regard to health or happiness, must be unreservedly condemned; for it should be remembered, that premature development of the intellect can only be obtained at the cost of deteriorated constitutional powers. It is the more important that this fact should not be overlooked, since so ignorant are many parents of the laws of health, that when they have done all in their power to destroy the physical strength of their offspring, they most contentedly attribute the result to any cause but the right one: just as, when Dr. Sangrado and Gil Blas killed their patients by repeated bleedings and copious drenches of warm water, they complacently imputed the mishap to their having been too lenient with the lancet, and too chary of their primitive medicine. Instead, then, of setting reason, experience, and the dictates of common sense at nought, parents must learn the few simple laws which regulate the animal economy; and must take care to act in accordance with them, if they would preserve those they are bound to cherish and educate from premature death, from general ill-health, or from the fearful miseries of nervous disorders, which—in all their Protean forms—assail those in after life whose minds have been cultivated at the expense of their bodies.

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[*] *Bacon's Essays: with Annotations.* By Archbishop Whately, p. 59, 2nd ed. London, 1857.

While teaching a child the rudiments of book-learning, he should be led to inquire into the reason of things, and the meaning of words; while the habit of accurate observation may be admirably encouraged by directing the attention to some of the marvellous works with which all creation abounds. To inculcate a love of natural history at an early period may be to lay the foundation-stone of much future happiness: as —" the labour we delight in, physics pain,"—so in after days the cares and anxieties, which we are all doomed to encounter in fighting the battle of life, may often be soothed and temporarily forgotten in studying the wondrous truths disclosed by scientific researches.

As the child progresses care must still be taken that the brain be not over-worked by too many or too severe tasks: on the contrary, the pupil should have but little to do, though the teacher must insist upon that little being well done. The studies must also be alternated; and attempts must be made to gradually wean the mind from light and silly associations. Let it not be forgotten, also, early to make attempts to foster the growth of genuine religious feeling:—not the canting religion of dreary Sundays, of assuming solemn looks, of text-quoting, or of uttering long prayers before men, but rather the religion of the head and heart; that true faith, in fact, which leads and aids a man to do his duty to his God, his neighbour, and to himself. The little child, who is brought up to repeat short and simple prayers at his mother's knees, has a rule of conduct thereby instilled into him which will probably never be forgotten; and in after life he may not only look back to these beginnings with feelings of reverence and love, but the recollection of them may serve to strengthen him in some good resolution, or assist him to resist many a powerful temptation. Teach the young, also, to hate hypocrisy and artifice; to love sincerity and earnestness; to be straightforward and honest at any sacrifice; to despise vice and wickedness in all shapes, but especially to detest it in the educated, and, above all, when practised under a cloak of religion.

The period of childhood being essentially a time when the heart is inclined to be light and gay, and when very simple pleasures produce halcyon days, all is to be done that can contribute to happiness. Consequently, amusing occupations should be provided, out-of-door pastimes—so congenial to youth—encouraged,* and the child allowed to mix with playfellows of his own age. No error can be more ridiculous than that of attempting to force the young to shun innocent recreations, for fear of making them too fond of pleasure. Indeed, by so doing, the very failing which it is desired to avoid, is engendered. The wise parent will be content with showing that no pleasures give so much satisfaction as those which are earned by work; and that pleasure is lost by the continual pursuit of it, or, as Plato eloquently expresses it:—"Pleasure and pain are two fountains set flowing by Nature, and according to the degree of prudence and moderation with which men draw from them they are happy or otherwise. Their channels run parallel, but not on the same level; so that if the sluices of the former be too lavishly opened, they overflow and mingle with the bitter waters of the neighbouring stream, which never assimilate with this finer fluid." †

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* Every boy should be taught swimming; and the greater the number of other manly exercises that are acquired during youth the better.

† *De Legibus*, t. viii., p. 203, *et seq.*

In pursuits and occupations such as I have roughly attempted to sketch time glides away, and the child passes onward to boyhood or girlhood. As the mind becomes stronger so the quality of the mental food must be improved; the studies being extended so as especially to strengthen the memory, to exercise the reasoning powers, to render the mind vigorous, and to promote the general intelligence. At this period must be inculcated lessons of truthfulness, patience, contentment, self-denial, charity, and fortitude: even now may attempts be made to cherish in the child the two attributes which, in the opinion of Epictetus, constituted a wise man—the power of bearing and forbearing. Moreover, early and frequently should it be impressed upon the boy's mind, not only that it is his indispensable duty to excel in whatever may be his pursuits, but that it is undoubtedly in his power to attain a high degree of excellence. An intelligent teacher will endeavour to learn which faculties are too weak in the pupil, and which too vigorous; so that while all are duly exercised, yet the former may especially be strengthened, and the latter gently repressed. So also the tastes and inclinations of the young should be ascertained; for "the nature of the boy," as Plutarch observes, "is the material to be worked upon, the soil in which the seeds of knowledge and virtue are to be sown."

The increased refinement and cultivation of all classes in the present day renders it necessary—to use a simile of Sydney Smith's—that the mind be accustomed to keep the best company: if only to avoid the mortification of being deemed ignorant and inferior. But there are more powerful reasons for selecting the books which are to be put into the hands of the young with great judgment and caution; for there are numerous writings which prove as destructive to the mind of the young reader as the volume presented by the physician Douban is said to have been to the body of the Grecian king; who—as the Arabian tale relates—imbibed fresh poison as he turned over each leaf, until he fell lifeless in the presence of his courtiers. The books which are most suitable are such as, without forcing the tender intellect, lead to inquiries into the reason of things, and suggest good thoughts; such as promote determination and decision of character; such as show that all great deeds are only accomplished by incessant industry and earnest zeal; such as teach men to excel by lifting up themselves, and not by depreciating others; and such as inculcate pure principles of action, and a horror of cunning, selfishness, and irreligion.

It is unfortunately too true that the most extreme credulity is not inconsistent with the greatest scientific attainments,—that what seems the most absurd and marvellous superstition is not irreconcileable with the highest education, or that the utmost prostration of mind is not incompatible with the loftiest range of intellectual power.* Hence, to impart knowledge and to inculcate a love of it, without at the same time teaching its right uses,† is only to be compared to playing a game of chance, or to venturing in a lottery, where the chapter of accidents may produce a prize, but where the odds are largely in favour of a blank. It may even be stated further, that superficial, or perverted knowledge, may be a greater evil than ignorance; for, the one makes men powerful demons, the other merely leaves them powerless animals. "A little knowledge," says Bacon, "makes men irreligious; but profound thought brings them back to devotion." ‡

To train a child aright it is certain that severity is very seldom—if ever—necessary; a clear, distinct, kind, but determinate manner, upon the part of the parent, being alone required. I am, of course, supposing, however, that endeavours are made to teach by example; that the influence of kind words—which, when used by those who are loved and honoured, have great weight—is tried; that the lessons imperceptibly taught by the daily life at home are thoroughly sound; and that the softening influence of courtesy and affection is shed over all. The rectitude of the father, the self-denial of the mother, and the earnestness with which both pursue their daily avocations, make a great impression on the youthful mind; and even much slighter incidents, which the thoughtless may only regard as trifles, often serve either to develop good qualities, or to pervert the yet unformed judgment. Amongst the most important of the quiet lessons taught by home influence, the duties of friendship and relationship may be alluded to; for it is by the proper performance of these duties that life is made happy, and mankind benefited. I would especially teach the young the value of showing true courtesy to all; the necessity for taking a strictly just view of their own conduct, but a very lenient one of the actions and opinions of others; the importance of attending to the many small and individually trivial, but collectively important laws, by which society is bound together; and the fearful consequences which ensue from encouraging feelings of envy, hatred, and malice. At the same time warnings may be instilled, and observations made to show the true uses of friendship: to teach that he who does a base thing, in zeal for his friend, "burns the golden thread that ties their hearts together."* I think it is South who says in one of his Sermons, that sorrows by being communicated grow less, and joys greater: for sorrow, like a stream, loses itself in many channels; while joy, like a ray of the sun, is reflected the more powerfully when it rebounds upon a man from the breast of his friend. The performance of good offices towards our fellows, moreover, not only confers immediate gratification, but permanently ennobles our dispositions; and enables us, at the close of the evening, to give a cheerful answer to the question each one should put to himself,—What have I done this day?

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* See *Mornings among the Jesuits at Rome*, by the Rev. M. H. Seymour.

† "But the greatest error of all the rest is the mistaking or misplacing of the last or farthest end of knowledge; for men have entered into a desire of learning and knowledge, sometimes upon a natural curiosity and inquisitive appetite; sometimes to entertain their minds with variety and delight; sometimes for ornament and reputation; and sometimes to enable them to victory of wit and contradiction; and most times for lucre and profession; and seldom sincerely to give a true account of their gift of reason to the benefit and use of men: as if there were sought in knowledge a couch, whereupon to rest a searching and restless spirit; or a terrace for a wandering and variable mind to walk up and down with a fair prospect; or a tower of state for a proud mind to raise itself upon; or a fort or commanding ground for strife and contention; or a shop for profit or sale; and not a rich storehouse for the glory of the Creator and the relief of man's estate."—Bacon's *Advancement of Learning*. Book i.

‡ Refer to Alison's *History of Europe*. Vol. ii., p. 1.

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* Jeremy Taylor's *Polemical Discourses.*

Lastly, let me urge, that the youth should be shown by the parent's course of conduct that, as members of society, all men have certain heavy moral obligations which it is incumbent upon them to discharge; and that he will be the happiest—independently of the nature of his occupation, or his station in life—who best performs the duties of his calling. The great end and aim of man's existence cannot be merely to sleep and feed; for our "godlike reason" was never bestowed "to fust in us unused." To quote the words of a true poet:—[*]

> "We live in deeds, not years—in thoughts, not breaths;
> In feelings, not in figures on a dial.
> We should count time by heart-throbs.
> He most lives,
> Who thinks most, feels the noblest, acts the best."

CHAPTER V.

ACCIDENTS AND DISEASES OCCURRING AT, OR SOON AFTER, BIRTH.

SECTION I.—STILL-BORN CHILDREN—APNŒA NEONATORUM.

INFANTS are occasionally born in a state of apnœa,[†] or of apparent death; to recover them from which very prompt and skilful attention on the part of the accoucheur is necessary.

Causes.—This condition may result from many causes, the most common being—(1) natural feebleness of constitution to such a degree that the infant is incapable of making the muscular exertion necessary for the commencement of respiration: (2) the existence of some obstruction to the flow of blood through the umbilical cord during labour; as when the cord is twisted round the neck of the infant or some other part of its body, or when, from prolapsus, it is subjected to pressure between the head of the child and the walls of the pelvis: (3) the premature separation of the placenta, *i. e.*, before the birth of the child: (4) too great or too long continued compression of the head, either by the forceps or by an obstacle in the pelvis: and (5) the presence of a collection of viscid mucus in the mouth and fauces preventing the entrance of the air into the bronchial tubes and pulmonary air-cells.

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[*] Bailey's *Festus.*

[†] The term apnœa (from *α*, *priv.*, and *πνεω*, *spiro*) is a great improvement over that of asphyxia (from *α*, *priv.*, and *σφυζω*, *pulso*). The one signifies want of respiration, and almost suggests artificial respiration as the remedy; the other means want of pulse, and teaches nothing, or, if anything, that the circulation has ceased, and consequently that attempts to excite respiration will be useless.

Symptoms.—In ordinary cases—those from feebleness, loss of blood, &c.—the child's limbs are relaxed and motionless; the skin cold, pale, and sallow; the lips flaccid, and the lower jaw depressed; and the pulsations in the funis are so feeble that they can sometimes hardly be distinguished. An effort may be made to breathe or even cry, but from want of strength the child falls into a state of apparent death. In other instances in which the brain has become congested from some obstruction to the flow of blood—apoplectic apnœa—the countenance is purple and bloated; the body hot, swollen, and plethoric; the limbs full and flexible; and the pulsations of the cord strong and hard. The heart is probably the *ultimum moriens*; and in neither class of cases does its action cease, although the pulsations are generally so feeble that they can only be detected by careful auscultation. As long, then, as the heart continues to beat, however feebly, so long is there a reasonable prospect of our being able to excite respiration, and so long must we persevere in our attempts, even if we have to continue our exertions for two or three hours; but when the heart's action has once stopped, owing to the suspension of respiration, it can never be restored. New-born children are very tenacious of life; and many cases that have at first sight appeared hopeless, have been saved by careful management.

Treatment.—The mouth and throat should be cleared from all obstructions with the little finger. We then attempt to excite respiration by blowing in the face, exposing the surface to cold air, douching hot and cold water alternately over the thorax, and by smartly slapping the buttocks and back.

Desormeaux recommends the accoucheur to fill his mouth with brandy and discharge it forcibly against the infant's breast; a process which it is rarely necessary to repeat more than three or four times, since, in instances where success is likely to follow, a convulsive contraction of the inspiratory muscles is almost immediately produced, the blood and air penetrate the lungs, and the respiration is gradually and fully established. Supposing all these attempts fail, there is but one plan to adopt, and that is the "Ready Method" of Dr. Marshall Hall. It is as follows:—Plunge the body into a hot and cold bath alternately. The temperature suggested is from 98° to 102° Fah. for the hot, and from 50° to 60° for the cold bath. The immersion should be momentary; the alternation quick. If respiration be not at once established, proceed without delay to place the infant in the *prone* position, and make gentle pressure on the back; there will be a good expiration. Then remove the pressure and turn the body *on its side and a little more;* there will be a good inspiration. Consequently, if this pronation and pressure, and this removal of the pressure and rotation be instituted *alternately*, there will be good respiration.* These measures are to be repeated gently, deliberately, and most perseveringly, sixteen times in the minute: at the same time the limbs are to be rubbed, with slight pressure, upwards, to promote the circulation by propelling the venous blood towards the heart. The *continued* warm bath is most injurious: since warmth shortens life in apnœa.

In *apoplectic apnœa* it may sometimes be advisable, when the congestion is very great, to divide the umbilical cord before tightening the ligature, so as to allow a spoonful or two of blood to flow from the child's body. The loss of blood, however, is not to supersede the "Ready Method," but rather to aid it. Should general convulsions occur, great care will be required to save the child's life: the warm bath with cold to the head, sinapisms to the feet, and purgatives administered until the meconium has all come away, are the remedies we must resort to.

When the function of respiration has been with difficulty established in weakly infants, some portions of the lungs—especially the lower edge of the upper and lower lobes, and the middle lobe of the right lung—are liable to remain solid and unaërated, giving rise to that condition known as ATELECTASIS. An infant so affected looks as if it had been rescued from certain death only to die more slowly; it is often jaundiced; it utters a weak whimper or cry; it can scarcely suck; it remains very feeble and very drowsy; the surface is cold; and the chest is but slightly dilated by the imperfect respiratory movements. After the lapse of a few days, or perhaps weeks, the child either gradually becomes stronger, the paroxysms of dyspnœa materially lessen, and good health is attained; or, in less fortunate cases, the symptoms increase, convulsions occur, and death ends the sufferings. To avoid this latter termination we must keep the infant warmly wrapped up, in a warm room; put it in a hot bath—100° Fah.—for five minutes, once or twice a day; employ stimulating liniments to thorax and spine—F. 86; administer stimulants of æther and ammonia—F. 58 or 61, followed afterwards by some preparation of cinchona—F. 60; give a mild emetic of ipecacuanha occasionally, if the air-tubes seem obstructed by any mucus; and lastly, if the exhaustion is too great to admit of attempts at sucking, the mother's milk must be drawn off, and feeding with a spoon resorted to.

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* *Lancet*, 14 Feb., 1857.

SECTION II.—INJURIES RECEIVED DURING BIRTH.

In difficult and tedious labours the infant may be bruised, or otherwise injured, from the long-continued pressure exerted upon its body, or from the use of instruments. In face-presentations, particularly, the features of the new-born child are often swollen, much disfigured, and distorted by convulsive movements; but in a few days the parts assume their natural appearance, and the convulsions gradually pass off. Fractures of the cranial bones—especially of the parietal—are well known to be occasionally produced by the force of the pains alone; particularly in cases of contracted pelvis, where the promontory of the sacrum projects very much inwards. So, also, the bones of the extremities may have been broken in cases where manual interference or turning has been required; especially if there has existed any disproportion between the organic and the inorganic constituents of the osseous system, or, perhaps, if there has been a slight want of dexterity on the part of the operator. The fracture is usually *simple*, and commonly occurs about the middle of the bone. Whenever these or similar accidents have happened, the misfortune should on no account be concealed, but at once be explained to the parents; and steps must be promptly taken to secure the union of the fractured extremities by the application of bandages, and thin pasteboard splints well padded, so as to prevent irritation of the skin. Fortunately the broken bones readily unite at this period of life; the consolidation being usually perfect by the end of fifteen days. In fractures of the cranium unaccompanied by depression, union will take place without any special treatment.

An interesting case is recorded by Mr. J. D. Jones,* of an infant born with a large wound upon its back, which deserves attention, if only for its important medico-legal bearings. The facts are briefly these:—In April, 1848, Mrs. B—— was delivered at the full term of utero-gestation of her first child, after an unusually easy labour. On examining the infant an extensive open wound was found, reaching from the third dorsal vertebra, across the scapula, along the back part of the humerus, to within an inch of the elbow. That the cut could only have been made some time before birth was clear; for fully one-third of it was cicatrized, and the rest had the healthy granulating appearance of a wound healing kindly. How, then, was it produced? The only feasible explanation was this: when the mother was about seven and a half months' pregnant she trod upon a cat as she was going down stairs, and to save herself from falling made a jump of five or six steps. A severe shock was felt at the time, and on the following day there was a slight sanguineous discharge per vaginam; however, she soon recovered. After birth the healing progressed favourably, and in five weeks there was only a large cicatrix left.

Now had this lady been a friendless unmarried woman, had the accident produced premature labour or been more recent, and had she been delivered without medical aid, who would have doubted that she had purposely injured the child in order to destroy it, and thus to rid herself of the witness to her shame! The silent testimony of the fresh wound might have led the unhappy mother to the scaffold, for few would have had the charity to give credence to her statements.

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* *Medico-Chirurgical Transactions.* Vol. xxxii., p. 59. London, 1849.

SECTION III.—CEPHALÆMATOMA.

This term is employed to designate a sanguineous tumour developed between the bones of the skull and the pericranium. A cephalæmatomatous tumour varies in size from that of a hen's egg to a large orange, according to the quantity of blood extravasated; and it generally increases for the first few hours after birth. It may result from long-continued pressure upon the head during a difficult labour; or it may appear after an easy delivery, probably owing to some disease of the bone existing before birth. The tumour is generally formed on one or other of the parietal bones: on the right more frequently than on the left; and occasionally on both—double cephalæmatoma. The swelling is soft, circumscribed, and fluctuating; and its base often becomes encircled by a hard ring, probably caused by the occurrence of ossification in the plasma exudation which is poured out by the irritated pericranium.

Treatment.—In the very few cases which have come under my own observation I have left the treatment entirely to Nature, as recommended by most practitioners; and there has been no reason to regret having done so, as the effusion has become absorbed in a few days. In some instances, perhaps, the absorption may be hastened by the use of evaporating lotions; but I should certainly hesitate to adopt any more active treatment, and especially that recommended by Naegele, Dubois, and others, viz., the incising the tumour, removing the blood, and applying compression. Should suppuration, however, take place, the pus must of course be evacuated, and the case treated as a dangerous abscess.

A kind of false cephalæmatoma is sometimes produced by the effusion of blood into the cellular tissue between the aponeurosis of the scalp and the pericranium, but, like the ecchymosis of a bruise, it requires no treatment.

SECTION IV.—NÆVI MATERNI.

The term *nævus maternus*, or *mother-mark*, is applied to many different cutaneous spots with which children may be disfigured; but, as moles or superficial pigmentary patches are not painful, do not increase in size after birth, and cannot be removed,* the following remarks will be confined to the consideration of the vascular or erectile nævus, or as it is sometimes termed—aneurism by anastomosis.

The erectile nævus may be defined as' consisting of morbid spongy tissue, which is formed of an agglomeration of dilated and distorted capillaries, inosculating directly and freely with each other. In different cases, arteries or veins, or both together, are affected. It commences usually as a small red or purple spot; has a tendency to dilate and spread; and affects the skin and sub-cutaneous areolar tissue of any region, but especially of the face, head, and neck. As the growth proceeds, the nævus becomes elevated above the cutaneous surface, and sometimes forms a soft tumour, which may increase to a great size. The erectile nævus—as a rule—is single, but sometimes several are developed on the same individual. Pulsations are rarely to be distinguished: occasionally a thrill is communicated to the fingers.

Treatment.—When the nævus is small, does not increase in size, and is so situated as not to cause disfigurement, it should be left alone: occasionally a spontaneous cure takes place. When seated on the face, and when manifesting a tendency to burst or to spread, we must endeavour to obliterate it; for which purpose many methods have been proposed.

Vaccination is perhaps the best means to employ in infants. The number of punctures to be formed will vary with the size of the nævus; when large, several must be made at its circumference, and a few on its surface, so as to produce a confluent vesicle. Very large nævi have been thus transformed into firm fibrous tissue. Supposing that the child has been previously vaccinated, or that the inoculation fails to destroy the spongy membrane, compression may be tried: or adhesive inflammation may be excited by occasional frictions with iodine or antimonial ointment: or several threads may be passed through the tumour with a fine needle, and allowed to remain until they give rise to suppuration: or a drop or two of nitric acid, or of the acid nitrate of mercury may be applied: or a finely-pointed stick of potassa fusa may be gently rubbed over the surface of the tumour, to produce ulceration: or Mr. Marshall's galvanic cautery may be resorted to, the heated wire being passed through the mass in various directions: or a solution of the perchloride of iron may be injected into the erectile tissue to coagulate the blood in its vessels: or a ligature may be applied so as to encircle the diseased part, and produce strangulation and sloughing. A ligature may be employed in many ways: thus, Mr. Fergusson has cured cases by passing one or more needles through the nævus, turning a thread round it or them, as in making the twisted suture, and allowing the whole to remain for forty-eight hours or longer.* I have also seen this gentleman successfully obliterate the vessels by passing ligatures under the tumour, so as to strangulate the diseased mass, without destroying the cutaneous surface. Or, a needle carrying a double thread may be passed through the centre of the base of the tumour, and the ligatures tied round each hemispherical half. And lastly, a promising modification of the treatment by ligature, has been recommended by Mr. Cooper Forster, which is thus practised:—two pins are to be passed at right angles to each other under the mass, and a ligature tied tightly round the whole. The pins are to be withdrawn immediately, and four hours afterwards the ligature is to be untied; a scab forms, which drops off at the end of fourteen days or so, without any suppuration, open sore, or untoward result occurring. The rationale of the treatment appears to be that the vessels compressed by the ligature have the current of blood in them arrested for a time, but not sufficiently to so entirely obliterate them, as to cause the part encircled to slough at once. By this means entire destruction of the nævus is prevented, but sufficient obstruction is caused to allow the blood in the tissue to become consolidated; and the whole becomes atrophied and drops off, leaving scarcely any scar.*

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* It is scarcely necessary to say that the process of tattooing—pricking the skin over the mark, and rubbing in some oxide of zinc or calcined magnesia, mixed with a little minium—is more likely to do harm than good in the great majority of cases.

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* *Practical Surgery.* 3rd ed., p. 156. London, 1852.

Excision of vascular tumours is rarely resorted to: when practised, great caution is necessary to avoid severe hæmorrhage, and care must be taken to make the incisions in the healthy tissues around the tumour.

SECTION V.—SCLEREMA.

This peculiar disease—well termed by M. Roger, *algide œdema*—consists of either partial or universal induration of the sub-cutaneous areolar tissue, with serous effusion. It is very rarely met with in this country, but appears to be by no means uncommon in France.

From all that I have been enabled to read on the subject, it appears that sclerema bears a striking resemblance to ordinary anasarca; and that it depends upon some obstruction to the circulation of the blood. The nature of this obstruction cannot be positively stated; but there is a great probability that it is really caused by deficient expansion of extensive portions of the lungs—atelectasis. It usually occurs within the first ten or twelve days after birth, in feeble or premature children; its development is favoured by cold, damp, and impure air; it may be partial or general; and it is often accompanied by well-marked jaundice. Moreover, the case often becomes complicated by the occurrence of gastric and intestinal disturbance.

Symptoms.—The disease usually commences in the lower extremities, by the skin first assuming a dry, stiff, yellowish, waxy appearance; and gradually becoming distended and unyielding, so that the infant is said to be skin-bound. As the disorder rapidly progresses in an upward direction, the temperature of the whole body becomes greatly reduced, but especially of the affected parts; the infant looks prostrated and unhealthy, and as if dying from exhaustion; there are indications of great restlessness and suffering, cries of a peculiar whining tone being frequently repeated; food is refused, and sucking prevented when the face is involved; the circulation is languid, and the pulse very feeble; the respiration is difficult and laborious; and symptoms of some complication generally arise. Death usually supervenes—often from asphyxia—within the first week.

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* *Medical Times and Gazette*, 13 June, 1857.

Prognosis.—Most unfavourable. When the œdema is very limited in extent and degree, and the respiration only slightly affected, recovery may be hoped for: general sclerema, on the contrary, may be said to be almost always fatal, within a few days, or at the farthest three weeks, from the first appearance of the symptoms.

Treatment.—Therapeutic measures are generally unavailing. Attempts may be made to restore warmth to the body and to induce perspiration, by frequently-repeated vapour baths, long-continued gentle frictions with warm flannel, and by enveloping the child thoroughly in cotton wool. The application of leeches over the œdematous parts, to lessen the quantity of blood in the system, and so favour its circulation, has been recommended; but I should rather trust to the frequent administration of wine, or other cordials and stimulants in small quantities, and should rigidly avoid all lowering measures.

SECTION VI.—INFLAMMATION, &c., OF UMBILICUS.

The detachment of the remains of the funis from the umbilicus of the newly-born infant, is usually completed in three, four, or five days; those cords desiccating the most rapidly which are small and thin, and not overloaded with gelatinous matter. When the separation is favourably completed, there is merely a slight oozing of serum; the navel becomes daily more drawn inwards; until by the end of the second week, the cicatrix is found firmly healed and marked at its centre by a small hard tubercle, consisting of the obliterated extremities of the arteries and vein.

It occasionally happens, however, that instead of cicatrization quickly following the detachment of the cord, the umbilicus becomes inflamed and ulcerated; suppuration takes place; and very serious hæmorrhage endangers life. When there is only slight inflammation, or superficial ulceration, great attention to cleanliness, with the continued application of Goulard water, or of the oxide of zinc ointment, may suffice to effect a cure; while if the ulcer becomes indolent it should be touched with the sulphate of copper, or nitrate of silver. But in aggravated cases with hæmorrhage, there is reason for great alarm; since the bleeding usually goes on slowly, until the child dies at the end of three or four days. In one instance, in which I was early consulted while there was merely a free oozing of blood, the bleeding was permanently controlled by the application of cotton wool, soaked in a saturated solution of the perchloride of iron: but I fear that this would hardly succeed many times; for—as a rule—pressure, styptics, nitrate of silver, the actual cautery, &c., have all been tried in vain, and even the ligature—applied by transfixing the base of the navel with a hare-lip needle, and then twisting a thread around and beneath it—has proved useless. Two examples of this fatal occurrence, in infants of the same mother, are related by Dr. Bowditch.* The first child was a female; the cord fell off on the third day, and there were no unusual appearances until the fourteenth, when oozing of blood commenced. Styptics, compression, and other means having been tried in vain, needles were passed through the skin, and ligatures applied—as in hare-lip, so as to enclose a circle of integument. This seemed at first quite successful; but on the eighteenth day the bleeding returned; on the nineteenth, several bloody stools were passed; and on the twentieth, death took place. After the mother had been delivered of two more children, who manifested no tendency to hæmorrhage, she gave birth to a male infant. The cord fell off naturally on the fifth day, and on the tenth hæmorrhage set in, which in spite of all means—the actual cautery included—continued until death on the fourteenth day. In this case—jaundice, together with some spots of ecchymosis, appeared on the body during life: after death, the liver was found much diseased.

SECTION VII.—INTESTINAL HÆMORRHAGE.

The newly-born infant sometimes suffers from vomiting and purging of blood; but so rare is this disorder in England, that in many of our treatises on the diseases of children no mention is made of it. It is essentially a disease of the early days of life, generally occurring between the first and sixth day: the greater proportion of recorded cases occurred in males.

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* *American Journal of Medical Sciences*, p. 64, vol. xlv. 1850.

The alleged *cause* is compression of the body during a tedious labour; but this is insufficient, as it has happened almost as frequently after natural as after protracted labours. Dr. Rilliet has shown that the true predisposing causes should be sought for—1st. In the injection of the intestinal tube, a state which is normal at the birth: and 2nd. In the difficulty with which respiration becomes established; the blood not being able to flow to the lungs, expands them imperfectly, engorges the other organs but especially the intestines, which—already congested—are unable to support this new tax.

Symptoms.—The precursory symptoms are best described by Dr. Rahn-Escher, whose remarks may be abridged as follows:—An infant, on the day of its birth, slept almost continuously; he changed colour frequently; had partial convulsions; deglutition was difficult; and he vomited: the following day hæmorrhage set in. Another infant was seized, four days after birth, with yellow watery stools, convulsions, paleness of countenance, spasmodic respiration, tympanitis, and great prostration: in the evening of the same day the bleeding showed itself. When hæmorrhage once sets in, it is generally abundant: the stools, at first composed of meconium and blood, soon consist of the latter only; and usually there is also vomiting of blood. Sometimes the vomiting of blood is more abundant than the intestinal hæmorrhage: occasionally the former exists alone. Etlinger quotes the history of a little patient who passed more than a pound of blood in vomiting and in stools. The hæmorrhage usually attains its maximum at a variable period within the first twenty-four hours of life, and ceases upon the second day; but it may continue up to the fifth day, and even later. The loss of blood rapidly prostrates the system; the infant becomes deadly pale, cold, and very feeble; it has a small pulse, difficult breathing, and occasionally convulsions; and there is most commonly an inability to suck. The subjects of the cases collected by Dr. Rahn-Escher remained thin, pale, flabby, weak, affected with diarrhœa or constipation, and subject to convulsions. One had afterwards symptoms of rachitis: another sank from tabes mesenterica and hydrocephalus at the age of twelve months: and a third, when one year old, was still very feeble and deadly pale.*

Prognosis.—In twenty-three cases, in which the termination is mentioned, the issue was good in twelve and fatal in eleven: in nine of the latter, death was rapid. According to Hesse, the hæmorrhage is to be regarded as the salutary crisis of a plethoric condition, the melæna of infants not being more dangerous than the simple melæna of adults. Dr. Rilliet disagrees with this statement, and the statistics just alluded to prove the justice of his objections; for when simple hæmatemesis occurs in the adult—*i. e.*, when it is not merely a symptom of cancer of the stomach, of organic disease of the liver, or of a deterioration of the blood from some acute fever—there is almost always a restoration to health, however abundant the bleeding may have been.

Diagnosis.—This is only at all difficult when the blood is retained: even then, the sudden paleness, the great feebleness, and the small pulse point to internal hæmorrhage. Care must be taken not to mistake blood drawn from the mammæ of the mother, or from excoriations on the nipple, and swallowed by the infant, for this affection. So, also, it must not be confounded with spontaneous bleeding from the nasal fossæ.

Treatment.—Drs. Rahn-Escher and Rilliet administered diluted sulphuric acid in cinnamon-water to some cases; and to others, an emulsion containing alum and musk, with fomentations of quinine and vinegar: cold compresses to the abdomen, and astringent enemata have also been used. They have, however, but little faith in any internal remedies; and advise that we should be content to place the infant in a cool and frequently-changed atmosphere, to apply cold compresses to the belly, and to keep the extremities comfortably warm. If the pulse be very feeble, a teaspoonful of wine with water may be given, or a few drops of ammonia and æther in camphor mixture. In all instances the child should be placed to the breasts if it have strength enough to suck; otherwise it must be fed with the mother's milk drawn into a spoon.

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* *Traité des Maladies des Enfans.* Par E. Barthez et F. Rilliet. 2nd ed., vol. ii., p. 295—310. Paris, 1853.

SECTION VIII.—SWELLING OF THE BREASTS.

A painful swelling of the breasts sometimes takes place—in infants of either sex—a day or two subsequent to birth; but the tumefaction disappears spontaneously without giving rise to any trouble, unless improperly interfered with. As a drop or two of viscid fluid may generally be squeezed from the gland, the vulgar imagine that this swelling depends upon the natural secretion; and rude manipulations are resorted to to force out "the stagnant milk." It is almost unnecessary to say that the swelling should not be touched; for friction or pressure will only tend to convert the simple congestion into an inflammation, which may be followed by suppuration.

CHAPTER VI.

CONGENITAL MALFORMATIONS.

1. INTRODUCTION.—The immortal Harvey first suggested that certain malformations consist, not in the substitution of an entirely new and anomalous type of structure in the malformed part, but only in the simple permanence of some of its transitory fœtal types; and the labours of Geoffroy St. Hilaire, Meckel, and others have reduced this suggestion into one of the most certain and comprehensive laws in teratological anatomy.* As the transient forms of the human fœtus are for the most part comparable to the persistent forms of the lower animals, it follows that the malformations occasioned by impeded development often acquire a brute appearance; and thus is explained the fact that they exhibit in different animals the form of the lower, but not of the higher classes.

It likewise appears probable that a limited series of the malformations that are now generally looked upon as decided results of arrested development, may come again to be regarded as cases in which the defective part had been, in the first instance, more or less fully evolved, and then subsequently destroyed by morbid action. Thus many eminent pathologists now attribute some of the most marked malformations of the head and upper part of the body to the destructive effects of hydrocephalus in the embryo. At a meeting of the Obstetric Society of Edinburgh, 15th June, 1847, Dr. Simpson stated, that in anencephalous monsters, he believed the malformation arose from intra-uterine disease, viz., from the bursting of the head when hydrocephalic. The brain is opened up and distended by fluid, so that it becomes gradually absorbed, and at length the enclosing membranes give way. The two small tubercles, always seen in anencephalous cases, lying on the base of the cranium, seem to be merely the remains of the membranes, shrunken up, and almost obliterated.*

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* *Obstetric Memoirs and Contributions* of Professor Simpson, vol. ii., p. 200. Edinburgh, 1856.

With regard to the origin of double monsters, no satisfactory explanation can be given. The three principal hypotheses which have been suggested, are—*a.* that of originally double ova; *b.* that of an excess or wrong distribution of formative power in a single ovum; and *c.* that of the adhesion and fusion of two single ova. Objections may, however, be raised to each of these opinions; and it is probable that neither of them are correct.

In the production of malformations, Nature seems to do nothing by chance, but rather to observe certain general though not universal laws, the chief of which are:†—1. Deviations from the normal do not proceed *ad infinitum*, but are confined within certain limits: thus, although organs which should lie on the right may appear on the left, and the converse,—though the abdominal viscera may occupy the thorax, and the thoracic the abdomen,—yet the brain has never been found in the chest, nor the kidneys in the skull.

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* *Edinburgh Monthly Journal of Medical Science*, Sept. 1847.

† Article *Teratology*, Todd's *Cyclopædia of Anatomy and Physiology*, vol. iii.; and Rokitansky's *Pathological Anatomy*, edition of Sydenham Society, vol. i. London, 1854.

2. Excessive development of one part may cause imperfect or retarded development of another, according to what Geoffroy St. Hilaire denominates *loi de balancement*. Thus fingers and toes in excessive number are often joined to *anencephalia*, *cyclopia*, &c. 3. Malformations, according to Meckel, are more rare in organs supplied by cerebro-spinal nerves (muscles, larynx, lungs), than in those supplied by the sympathetic (the digestive, urinary, generative). The vascular system is, however, most liable of all. 4. In malformed births, dissimilar parts are never seen fused or united with each other, such as the intestinal tube with the aorta, the arteries with the nerves, &c. 5. No malformed organ loses entirely its own character, and no malformed animal loses its generic distinction. 6. Female malformations are by all accounts more frequent than male. 7. Meckel has collected many examples of the hereditary nature of malformations, and their repetition in children of the same parents. Thus, a man with six fingers to each hand, and six toes to each foot, transmitted the same malformation to his eldest son; whose three sons, again, were born with the same redundant organization. 8. The malformations seldom, or perhaps never, agree with the apprehensions *à priori* of pregnant women. In the case of twins, as the acephali especially show, one child may be malformed, and the other perfect, though both have been exposed to the same influences. 9. It often happens, that a woman who has once produced a malformation is troubled by the fear of another similar occurrence; but her fears are usually groundless, for the second child will generally be well formed. There are exceptions to this rule in the production of merely supernumerary parts, and also in twin malformations, which often recur out of the same mother, from some hereditary tendency. 10. In twin malformations the same parts always coalesce—as thorax with thorax, abdomen with abdomen, head with head.

A complete account of all the various malformations of the fœtus would be out of place in these pages. I shall therefore, with a few exceptions, confine my descriptions to those forms which are not necessarily fatal to life, and which perhaps admit of relief or cure.

2. **Acephalus.**—The head alone may be wanting, or with it more or less of the trunk, so that nothing may be present save a pelvis with lower extremities. In these cases the pregnancy is almost always a twin or triple one, the malformation being only fatal to the affected fœtus. Rokitansky observes, that in some instances, perhaps, this state is deducible from injury to, or destruction of the germ, or from the disturbance occasioned by a twin.

3. **Acrania.**—The skull is present but fissured. Uterine life does not seem to be interfered with, as the children are born well nourished; they rarely, however, survive their birth many hours. There are many forms of this monstrosity: thus, the brain may be absent and the whole base of the skull exposed; or, the denuded surface of the base of the cranium may be occupied by a spongy substance instead of brain; or, the skull may be more evolved, but having an opening through which the brain protrudes as a hernia. In this last variety—*hernia cerebri*, *encephalocele*—a tumour, generally covered with the external integuments, arises from some part of the skull, and contains a portion of the cerebrum or cerebellum, or even the entire cerebellum. In some instances there is a collection of serous fluid in addition to the portion of brain, forming what is termed a *hydro-encephalocele*. The tumour is most frequently observed on the occiput, forehead, anterior or posterior fontanelle, lambdoidal suture, or on either temporal region. Encephalocele is not necessarily fatal; as, although most children afflicted with it die during early infancy, yet cases are recorded where life has lasted twenty, thirty, or even sixty years. As a general rule, all treatment is useless; but there are some exceptional cases, where the tumour may be replaced in the skull without detriment to the child, and retained in position by a thin metallic plate and bandage. Should the collection of serum, also, be large, a minute puncture may be made with a needle to allow of its escape; methodical compression being afterwards employed to try and prevent its re-secretion. Some practitioners have endeavoured to remove the tumour by ligature, but the operation has always been fatal.

4. **Atresia Palpebrarum.**—The eyelids are said to coalesce

naturally towards the end of the third or the commencement of the fourth month, and to separate afterwards. Accordingly this malformation would be an arrest of development. The adhesions must be divided on a director cautiously introduced at the outer angle of the eye. This vicious formation, however, is seldom simple.

5. Atresia Oris.—According to Burdach, the lips coalesce in the fourth month, closing the mouth until the sixth, when they again separate. According to Bischoff, however, this malformation might have a different origin. At a very early period, the visceral edges of the animal layer mutually incline towards each other inferiorly, unite, and form, through the medium of Rathke's so-called inferior bond-membrane, the visceral cavity of the embryo. Not until the visceral arches break forth above does the upper portal to the nutritive canal open, and not until still later the mouth. The atresy might, therefore, depend upon the abiding of the bond-membrane. In either case it would be an arrest of development.*

This malformation is rare, and when it exists is usually associated with other vicious formations. A small opening should be made with a bistoury in either corner of the mouth, so as to allow of the introduction of a director, upon which the closed membrane is to be divided. Care must be afterwards taken to prevent the cut surfaces from re-uniting.

6. Atresia Linguæ.—The tongue may be unnaturally adherent to the sides or to the under surface of the mouth, so that sucking and other movements are prevented. The adhesions must be cautiously divided with a bistoury, and the bleeding checked by the application of lint soaked in a solution of alum or in the tincture of the sesquichloride of iron.

The frænum linguæ is sometimes so short, or its attachment reaches so nearly to the tip of the tongue, as to interfere with the motions of the organ; in which case the child is said to be *tongue-tied*. This malformation is by no means common; though nurses and young mothers are very apt to imagine its existence, especially if the child has the slightest difficulty in sucking. When really present, it is easily remedied by raising the tongue from the floor of the mouth with the two forefingers of the left hand, and then dividing the edge of the frænum for about the eighth of an inch with a pair of blunt-pointed scissors, held in the right hand. Care must be taken to cut as near the floor of the mouth as possible, so as to avoid wounding the ranine arteries or veins.

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* Rokitansky. *Opus cit.*, vol. i., p. 65.

7. HARE-LIP.—The simplest degree of this deformity is single *hare-lip*, in which the lip is fissured only on one side; it may, however, be complicated, with partial or complete fissure of the palate. The greatest malformation of this kind is *double hare-lip with fissured palate.*

This arrest of development occurs only in the upper lip; the fissure is never in the mesial line, but always under one or both nostrils; and the deformity may vary from a slight notch to a complete fissure extending close into the nostril, so that an immediate communication is formed between the oral and nasal cavity. "With the imperfect development of the skin there is usually more or less of the same condition in the bone. That part of each superior maxillary bone which contains the incisor teeth, and which constitutes a distinct bone in the human embryo, and in many animals—the intermaxillary, or premaxillary of Owen—the divided hæmal spine of the nasal vertebra—may be disconnected on one or both sides, leaving a gap in the alveolus, which may possibly extend backwards to be complicated with fissure of the palate. This intermediate portion may be displaced and attached like a snout to the end of the septum narium. Sometimes the upper incisor teeth and their alveoli project through the fissure in the lip."*

Treatment. The only point requiring consideration in these pages is as to the time at which attempts should be made to remedy the defect by operation. On this subject I need only say, that having seen this operation most successfully performed on infants only a few days old, remembering, too, that operations on infants do not produce convulsions—as was formerly feared, that the proceeding is not dangerous to life, and that the earlier it is executed the greater chance there is of the nose and jaw assuming a good shape, I should not hesitate to recommend its being early resorted to in all cases, but especially where the deformity produces any difficulty in sucking. In other instances, the operation may be deferred until the time of weaning if the parents wish it. For the mode of performing the operation my readers must refer to the admirable manuals on surgery by Professor Fergusson, Dr. Druitt, &c.

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* Druitt's *Surgeon's Vade Mecum.* 7th ed., p. 421. London, 1856.

8. CLEFT PALATE.—Although the deformity of hare-lip is often accompanied with fissure in the roof of the mouth, yet the latter may exist alone. When it does so, the alveolar margin is usually found quite complete; the fissure being confined to the hard and soft palate, or to a portion of them, or only to the uvula. Very rarely the cleft extends through the soft and hard palate and alveolar margin, leaving the lip entire.

The exact condition of the parts in this arrest of development had never been represented by any surgeon in this country until Professor Fergusson made his careful dissections. For an account of these, as well as for the manner in which the operation of staphyloraphy is to be performed, I must refer to this gentleman's writings.* Up to the year 1852, Mr. Fergusson had operated, according to the method he has suggested, on twenty-six cases of fissure of the soft palate; in only three of which did he fail to effect a cure. No operation should be attempted until the mouth is fully developed, that is to say about the period of puberty.

9. AMYELIA.—Absence of the spinal cord is described under this term. It is very uncommon, and is almost always combined with *acrania*. Death takes place directly the fœtus is separated from its parent. The medulla spinalis may be present, but fissured into two juxtaposed cords; or, it may be absent, and its place occupied by a simple nervous expansion. In both cases death occurs soon after birth.

10. SPINA BIFIDA AND HYDRORACHIS.—Fissure of the spinal column, and dropsy of the spinal medulla, are usually connected together, though either may occur separately. When

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* *Medico-Chirurgical Transactions*, for 1845; and also *A System of Practical Surgery*. 3rd ed., p. 611. London, 1852.

spina bifida is unaccompanied by hydrorachis, the deformity consists in absence of the spinous processes of the vertebræ; the vertebral arches being bent towards each other so as to leave only a very slight space between them. In the greater number of cases, however, the spinous processes and laminæ of some of the vertebræ are widely cleft, or deficient: consequently the cord and its coverings being deprived of support, protrude and form a fluctuating tumour, varying in size from an orange to an adult head; the serous fluid which naturally lubricates the medulla and its membranes being secreted in excess. The tumour is generally covered with skin, under which is areolar tissue, and then dura mater. If the child lives, the latter becomes thicker and harder as age advances. "The connection which generally exists between the cord or the nerves and the walls of the sac, is a point of the utmost importance. Some cases are related, by various authors, in which neither the cord nor the nerves had any connection with the sac; these parts followed their usual course down the spinal canal, but in by far the greater number of cases that have been placed upon record, the nerves presented some kind of connection with the sac. Of *twenty* preparations of spina bifida occupying the lumbo-sacral region, which I have examined in various collections, I have found but *one* in which the nerves were not connected with the sac. If the tumour corresponds to the two or three upper lumbar vertebræ only, the cord itself rarely deviates from its course, and the posterior spinal nerves are generally the only branches which have any connection with the sac. But if the tumour occupies partly the lumbar and partly the sacral region, then generally the cord itself and its nerves will be found intimately connected with the sac. M. Cruveilhier believes, from his dissections, that this connection is constant." *

Terminations.—Before birth, spina bifida does not seem to affect the fœtal health; afterwards, the noxious effects vary with the seat of the tumour, and its contents. When the cleft is in the cervical portion, it is generally fatal a few days after birth: it is the least dangerous when seated in the lumbar and sacral regions, some few individuals having lived with it for twenty or thirty years, or even for the natural term of life. If complicated with hydrocephalus, the prognosis is very unfavourable; and such is also the case when there is paralysis of the lower extremities, or when the tumour continues to enlarge, or when its walls enlarge and burst. This malformation is said by Chaussier—whose opportunities for observation at the Paris Maternité have been large—to be met with about once in every thousand births.

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* *Remarks on Cases of Spina Bifida*, by Prescott Hewett. *Medical Gazette*, vol. xxxiv. London, 1845.

Treatment.—As a general rule, the less the tumour is interfered with the better; all operations being attended with great danger. In cases, however, where the fluid contents are rapidly increasing in quantity, it is certainly justifiable to try the effects of puncture, followed by compression. Two rules laid down by Mr. Hewett must be observed:—1. The tumour should never be punctured along the mesial line, especially in the sacral region, for it is generally at this point that the cord and its nerves are connected with the sac. The puncture is to be made at one side of the sac, and at its lowest part, so as to diminish the risk of wounding any of the nervous branches. 2. The instrument ought to be a needle or a small trocar, for if a lancet is used there will be a greater risk of wounding some important part contained in the cavity of the tumour. Compression by air-pads and bandages should be resorted to after evacuating the fluid from the sac.

Iodine injections have been proposed and practised by M. Chassaignac, and in one case at least with apparent success. More evidence, however, is required of the safety and utility of this mode of treatment before its adoption can be recommended.

In all instances attention should be paid to the general health: the diet should be nutritious, and in the case of an infant at the breast, great care should be taken that the nurse is strong and healthy: while if residence at the sea-side can be obtained, so much the better.

11. Ectopia Cordis.—In the regular evolution of the fœtus, the opening on the anterior surface of the body closes itself at its upper part so as to cover the thoracic viscera, before completing the abdominal cavity; so that the thoracic viscera are

enclosed, while the abdominal still remain out of their cavity and in the sheath of the umbilical cord. Unfortunately, however, it sometimes happens that the abdomen is completed whilst the thorax remains open, and the heart is placed on the anterior surface of the latter. In this malformation—ectopia cordis—the heart has no pericardium, and is situated on the median line of the anterior wall of the thorax; the sternum also is generally wanting, or it is divided into two parts, or it consists only of the manubrium.

During fœtal life this condition is immaterial; but very shortly after birth it causes death.* Cruvielhier had the opportunity of studying the motions and sounds of the heart in a child who was alive nine hours after birth: the heart was outside the chest, having escaped through a perforation in the superior part of the sternum, so that it was as completely laid bare as though the sternum had been removed and the pericardium incised.†

12. PERMANENT PATENCY OF THE FORAMEN OVALE, &c.—The septa of the ventricles and auricles form only gradually within the heart, the septum of the auricles not arriving at its full development till after birth. Defective development of the septum of the ventricles occasions a resemblance with the hearts of fishes and of reptiles (the crocodile excepted), and especially of serpents and tortoises; absence of the septum of the auricles, a resemblance, in particular, with the hearts of fishes. It is often quite evident that the arrest of development has been caused by endocarditic changes in the valves—the residue of fœtal valvular inflammation.

The date at which the foramen ovale and ductus arteriosus cease to be patent is not accurately known; but it is certain that these openings are not obliterated immediately after birth, and that the period at which they become so varies in different cases.‡ From numerous post-mortem examinations made by M. Billard, this gentleman concludes that both openings are usually closed in from eight to ten days; although he has found them open at the end of three weeks without giving rise to any peculiar symptoms. Moreover, the same author observes, that the modifications which take place in the organs of circulation of the new-born infant occur in the following order: the umbilical arteries are obstructed; then the umbilical veins; the ductus arteriosus; and, lastly, the foramen ovale.

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* Article *Teratology*, Todd's Cyclopædia.

† *Gazette Médicale de Paris*, 7 Août, 1841.

‡ See note, p. 19.

If the fœtal openings remain patulous much beyond the above periods, or if any abnormal communication exists between the cavities of the heart, a more or less perfect mixture of the arterial with the venous blood results, giving rise to a peculiar affection, termed CYANOSIS.

Cyanosis, or morbus cæruleus, or blue disease, is characterized by a blue, purple, or leaden hue of the integuments, most marked in the lips, cheeks, and nails; coldness of the surface; prominence of the eyes; considerable feebleness; and by occasional paroxysms of difficult respiration, which are especially induced by excitement, or any cause which hurries the circulation. This affection is generally developed within the first month after birth, most commonly during the first few days; and it usually proves fatal at an early period, though cases are known in which patients have lived even to old age. The most common, and least fatal form of cyanosis is that which depends upon a communication between the auricles by means of the foramen ovale; and occasionally—though very rarely—this variety undergoes a spontaneous cure owing to the obliteration of the opening. The chances of life depend very much upon the nature of the organic disease, and upon the severity and frequency of the paroxysms of dyspnœa: the period of most danger is, however, passed when the child has reached its eighth or tenth year. The symptoms can only be palliated by allowing the patient pure air, a nourishing but easily-digested diet, warm clothing, &c. Extra care will be required at the period of weaning, and during dentition.

13. CONGENITAL UMBILICAL HERNIA.—The abdominal fissure may remain open through its whole extent, and the abdominal viscera will then lie out of the body. But the fissure may unite properly, except at the epigastric region; and congenital umbilical hernia then results. The size of the hernia will depend upon the viscera contained in it; the liver, stomach,

and small intestines, having all been found in tumours of large size. Four cases only are known in which the life of the malformed child lasted for any time after birth: in these, the external coat of the hernial sac mortified, and the tumour became gradually covered by true skin.

This malformation must not be confounded with the hernia which is produced after birth by the umbilical cicatrix expanding, so as to form a cylindrical or conical tumour, into which a portion of the omentum or intestine protrudes.

14. ABIDING PATENCY OF THE PROCESSUS VAGINALIS PERITONÆI (the upper portion of the tunica vaginalis testis) gives rise to congenital hernia, or hydrocele. Generally speaking, the inguinal canal closes immediately after the testis has—in the sixth or seventh month—descended from the abdomen into the scrotum, carrying with it a process or continuation of the peritoneum, which ultimately forms the tunica vaginalis. Occasionally, however, an arrest of development prevents the said closure from taking place; and the canal, thus remaining pervious, allows a portion of intestine to descend, constituting *congenital hernia;* or permits an effusion of serum to pass from the abdominal cavity into the scrotum, producing *congenital hydrocele.*

Treatment.—In congenital hernia, where we are sure that the testicle has descended into the scrotum, the intestine is to be returned—as soon as possible after birth—and retained in the abdomen by a small spring-truss; the pressure of which generally causes slight inflammatory action and closes the opening. Before applying the truss, however, one precaution is necessary, viz., it must be quite clear that the hernia is reduced; since it sometimes happens that this cannot be accomplished, owing to the gut having contracted adhesions—probably from intra-uterine adhesive inflammation—with the testicle or some part of the tunica vaginalis. In those cases where the testis is still retained in the abdomen, the hernia should not be interfered with, provided it continues to come down after being replaced, as it almost certainly will. In congenital hydrocele, the best plan is to try and impart tone to the parts by gently douching them with cold water twice a-day; while a small truss may be worn to compress the inguinal opening. Should the tumour attain any considerable size, tapping with a very fine trocar may be resorted to; though such a proceeding will very rarely be called for.

15. CLEFT URETHRA AND SCROTUM (Hypospadias).—This malformation may exist in various grades. At an early period of fœtal life is discoverable, at the lower side of the rudiment of the penis, a groove, which extends to the common orifice of the urinary and sexual organs. In the male, the edges of this groove being brought into apposition, coalesce into a raphe or suture, and thus form at once the scrotum and urethra. Where this process wholly or partially fails, there arises a malformation, which, if the penis be at the same time short and the testicles retained within the abdomen, closely simulates female development—a form of spurious hemaphroditism. It is incurable, and usually—but not necessarily—causes impotence.* To this malformation succeeds,—

16. CLOACAL FORMATION—junction of the orifice of the anus and of the external orifice of the urinary and sexual organs—a formation which, being at an early period normal, may, through an arrest of development, become persistent. In the male it is necessarily associated with the last-mentioned vice of formation, that is, with hypospadias; and frequently, also, with cryptorchism (non-descent of testicles into scrotum).†

There are two other varieties of *hypospadias*, more common and less important than the preceding, viz., where the urethra, instead of extending to the extremity of the glans penis, terminates at the base of the frænum of the prepuce; or where it opens just in front of the scrotum. In *epispadias*, the orifice of the canal of the urethra is on the upper surface of the penis, at a greater or less distance from the end of the glans.—Occasionally, though very rarely, the parts are well formed, but the orifice of the urethra or of the prepuce will be found imperforate. In the first case, an orifice must be made at the proper site, and prevented from closing by the occasional use of a bougie; and, in the second instance, circumcision should be at once performed in the usual way.

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* Dr. Simpson states, in his Obstetric Memoirs, that he has been consulted in three cases where hypospadiac male children have been baptized as girls. He refers also to an instance "where a child taken into a convent in Malta, as a female, turned out at puberty to be an amorous hypospadiac male; and, subsequently, became a sailor instead of a nun." Vol. ii., p. 234.

† Rokitansky. *Opus cit.*, vol. i., p. 62.

17. HERMAPHRODITISM.* — Hermaphroditic malformations may be arranged in two classes—*spurious* and *true*: the former comprehending such deformities as cause the genital organs of one sex to approximate in appearance and form to those of the opposite sexual type; the latter including those in which there is a combination, upon the same individual, of more or fewer of both the male and female organs.

Spurious hermaphroditism, in the female, may depend upon excessive development of the clitoris, this organ occasionally being so large as to resemble the penis; and—however strange it may appear—upon prolapsus of the uterus and vagina. In the male, extroversion of the urinary bladder; adhesion of the under surface of the penis to the scrotum; and hypospadias, as before mentioned, may cause an appearance simulating female development.

True hermaphroditism comprehends the following varieties of malformation:—there may be a testicle on one side of the body, and an ovary on the other; instances of which have been observed in many animals and in the human subject—a good preparation, taken from the body of a supposed male convict, is in the Museum of the Dublin College of Surgeons: or the external sexual organs may be male and the internal female, or *vice versâ*, as has been often observed among our domestic quadrupeds,† and very rarely in the human subject: or there may be a female uterus and male vesiculæ seminales, with a general female type: or an imperfect uterus may exist, occasionally provided with Fallopian tubes, superadded to a sexual organization essentially male—instances of which, occurring in the human subject, have been described by Harvey, Petit, Mayer, &c.: and, lastly, there are the cases in which ovaries and testicles have coexisted upon one or both sides of the body—several examples of which are recorded as occurring among animals, while four are said to have been observed in the human subject.*

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* From Ἑρμης, Mercury, and Αφροδιτη, Venus. See the fable in Ovid's Metamorphoses, of the union into one of the bodies of Hermaphroditos, the son of Mercury and Venus, and the nymph Salmacis.

† John Hunter showed (*Transactions, Royal Society*, vol. lxix.) that when the cow—especially among black cattle—brings forth twin calves, one a male, the other apparently a female, the male is a perfect bull calf, while the female is usually imperfectly formed in its internal sexual organs, though it has the external signs of a cow calf. Such hermaphroditic twin cattle are known as *free-martins*.

18. Extroversion of the Bladder.—In this malformation—sometimes called congenital fissure of the bladder—there is a deficiency in the anterior part of the bladder, with fissure of the lower part of the abdominal walls; so that the inner surface of the posterior part of the bladder becomes extroverted, and lies exposed on the hypogastric region. The bladder thus forms a red, spongy tumour, just above the separated pubic bones; apparently involving the umbilicus, so as to give the appearance of a deficiency of the umbilical cicatrix. In male children the orifices of the vasa deferentia are to be found in the inferior part of the tumour. The orifices of the ureters are seen as small papillary eminences on the naked internal surface of the bladder: the urine drops continually out of them. In the male, the penis is fissured on its upper surface—epispadias; the testes are often retained in the abdomen or inguinal canal; and the vesiculæ seminales, prostate, and vasa deferentia, offer various deviations. In the female, the labia majora and minora are separated, and are without a commissure at their upper part; the vagina also is often closed or very narrow. This malformation is not dangerous to life, and the annoyance from the continual dropping of the urine may be remedied by wearing an apparatus for its reception. It is much more common in males than females; of 68 cases collected by Mr. Earle, 60 occurred in the former.

19. Inversion of the Bladder.—If the urachus remain open after birth, the urinary bladder may be expelled, and thereby inverted through it. As far as I know, only one instance is

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* The student who wishes to learn all that is known on the subject here treated of, should consult Dr. Simpson's excellent essay on *Hermaphroditism* in the Cyclopædia of Anatomy and Physiology, vol. ii., p. 684; or the reprint of the article in the same author's *Obstetric Memoirs and Contributions*, vol. ii., p. 214. Edinburgh, 1856.

recorded.* A more frequent effect, however, of abiding patency of the urachus is, that the urine escapes through the umbilicus. A light truss, with a proper pad to press upon the umbilical opening, should be worn to prevent the passage of the urine.

20. Atresia Vulvæ.—Where this exists without occlusion of the urethra it produces no symptoms until the epoch of menstruation. When the malformation is such that the urine cannot escape, the united surfaces of the labia must be divided and kept asunder until cicatrization has taken place.

21. Malformations of the Intestines.—When the meconium is not voided by stool within twenty-four or thirty-six hours after birth, we should seek for the cause of its retention. This may be due either to weakness or sluggishness of the intestinal walls, or to some mechanical obstruction. In the first case, a small dose of manna, or castor oil, or any other mild purgative, will quickly cause its ejection; in the second instance, the nature of the obstruction must be ascertained, if possible.

The most common cause of obstruction is *atresia ani*—imperforation of the anus—in which the rectum ends in a blind pouch at its inferior part. Where this simply exists—the rectum being present—it is only necessary to wait until the gut distended with meconium can be felt, and then to make a puncture with a trocar and canula, or with a straight bistoury, through the tense membrane where the anus should be naturally; taking care subsequently to keep the orifice patent by a tent of lint. But in many instances it happens that the orifice of the anus is present, while the rectum is obliterated or absent: and in this case a much more serious operation must be practised, viz., either an artificial anus is to be formed in the spot where it ought to exist, or an opening must be made into the intestine in the left lumbar region. Where there is any hope of success, it is obvious that the first proceeding should be adopted; and to effect it, the surgeon must dissect back the parts down to the intestine, draw the latter forward, open it, and then by sutures secure the edges of the opening to the anal orifice. Unfortunately, I believe that this proceeding—though it has been successfully resorted to—is seldom practicable; and then, in order to save life, the colon must be opened in the left loin, after the manner proposed by Amussat in 1832. The steps of the operation consist in making an incision through the skin and fat horizontally above, and parallel to, the crest of the ilium; commencing near the spine, and carrying the cut outwards for about two inches. Taking the interval between the external oblique and latissimus dorsi muscles as a guide, the surgeon carries his incision through muscles and fascia, so as to come upon the gut where it is uncovered by peritoneum. Any fat which may be in the way is then removed; two threads passed through the wall of the bowel—above and below—to steady it when opened; and an opening is then to be made into the bowel, and its edges firmly secured by stitches to the sides of the external wound. Care will subsequently be required, lest the aperture close; and an apparatus must be worn to prevent the involuntary discharge of the fæces.*

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* R. Froriep (*Chirurg. Kupfertafeln*, Heft 67, Taf. cccxl.), quoted in the Article *Teratology*, Todd's Cyclopædia.

There are still other cases in which the obstruction is situated too high up in the intestines to allow of removal. Dr. Jungnickel has related a good example. An infant born apparently healthy, passed no stools, but vomited meconium. An enema brought away a blackish mass, but the vomiting went on, and the child died on the third day. On examination, the œsophagus and stomach were found in a normal condition; but the duodenum was much enlarged, as was the jejunum for about a foot in length, when it terminated without exhibiting the smallest rudimentary connexion with the rest of the canal. The latter, traced up from the rectum to the small intestine, terminated in an entangled knot, which was connected to the liver, near the fundus of the gall-bladder; it was empty, but up to the knot moveable. The rest of the organs were normal.

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* An interesting case, showing the value of this operation (which has now been successful in many instances) is detailed in the *London Medical Gazette* of the 25th March, 1842. At the beginning of the year, an infant a few hours old was taken to M. Larrey on account of some impediment to the exit of the fæces. A cul-de-sac, about an inch and a half from the anus, was detected; and M. Larrey having tried unsuccessfully to introduce a catheter, plunged a trocar into the cul-de-sac (as was supposed), but no meconium followed the withdrawal of the instrument. When the child was forty-eight hours old, Amussat was consulted. The abdomen was hard and distended, the face dusky, and there was frequent vomiting. From the examination which was made, Amussat was led to believe that about two inches from the anus there existed an interruption of the rectum, the caliber of the gut being at this point totally obliterated; and he was of opinion that it was totally impracticable to form an artificial anus either in the anal or coccygeal regions, but that an incision into the colon, in the left lumbar region afforded the only chance of life to the child. The operation was performed; and four weeks subsequently the case was doing well, the fæces readily escaping through the artificial anus. A small tent was kept constantly in the aperture to prevent its closing.

22. SPONTANEOUS AMPUTATION OF THE FŒTAL LIMBS IN UTERO.—It is now an undisputed fact, that amongst the many accidents to which the fœtus in utero is liable, we must allow a place to spontaneous amputation of the limbs. This remarkable injury may happen to either of the four extremities, or to any part of them, or to all of them.[*] If the removal of the limb takes place at an early period of uterine existence, the separated member may be completely dissolved in the liquor amnii; but when the amputation occurs towards the end of gestation, the limb may be expelled after the membranes are ruptured, or it may come away with the placenta after the birth of the child, or it may be still partially attached by a fibrous cord, or by skin, &c., to the injured extremity.

The proved occasional causes of these accidents are, first, constrictions of the limbs by bands of false membrane, or by twistings of the funis; and, second, compound fractures,—these latter, however, being very rare, and probably only efficient towards the end of utero-gestation. As regards the manner in which the false membranes or ligatures are formed, it is highly probable, as Dr. Montgomery[†] has suggested, that they are the result of inflammatory action; by which plastic lymph is poured out and organized, and subsequently changed into pseudo-membraneous bands or cords, as it is well known occasionally happens in other situations, *e. g.*, the pleura, pericardium, peritoneum, &c. As to the way in which the apparently local inflammation is excited, or the manner in which these ligatures become fastened round the limbs, no satisfactory explanation has yet been given; but when once applied, they may reasonably be supposed to contract; and as the tightening is aided by the growth of the limb, it necessarily happens that the integuments and other soft parts are gradually carried inwards, until the vessels become so compressed that sufficient blood cannot be transmitted to nourish the parts below the constriction. Hence the vitality of the limb becomes reduced; the bone—owing to the obstruction of its nutrient vessels—becomes brittle and weak; and finally, under some motion of the fœtus or its parent, the limb separates.

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[*] In the *Medical Times and Gazette*, 10 Dec. 1853, is recorded the case of a child born with all the four extremities wanting, except short stumps of arms, and with the parts all soundly healed. At six weeks old it was thriving and doing well. The head, spine, trunk, pelvis, and genitals all seemed perfectly normal in construction. The deficiencies, it was clear, from the condition of the truncated extremities, had been produced by a series of intra-uterine amputations, and not by arrest of development. No remains of the wanting members were found.

[†] The admirable essay upon this subject, by Dr. Montgomery, in his treatise *On the Signs and Symptoms of Pregnancy*, should be referred to.

The usual length of the umbilical cord is about twenty inches; but it may be either much longer or much shorter. When very long—it has been found to measure forty-eight or even sixty inches—it is usually twisted around the body of the fœtus, or round the neck, or it may be fastened round one of the extremities. As a rule, the facility with which the smooth funis moves upon the body of the fœtus prevents its acting as a compressing agent; but occasionally it becomes adherent to the fœtus, and hence as the latter enlarges, the cord acts as an amputating agent, just as the false membranes do. Excessive shortness of the funis—six or seven inches—is usually accompanied by deformity of the fœtus; and especially by that kind which consists in some morbid displacement of the viscera.

CHAPTER VII.

NON-CONGENITAL DEFORMITIES.

1. INTRODUCTION.—Among the number of persons that may be seen afflicted with some kind of distortion, by far the largest proportion were born with the normal symmetry of form; disease or accident having been the exciting cause of the disfigurement.

Deformities arise chiefly from diseases of the bones, muscular system, or ligaments; and from certain mechanical causes, such as carrying heavy weights, constantly sitting or lying in improper positions, &c. "Many portions of the osseous system," says Mr. Bishop, "are concerned in the production of deformities, more especially those which transmit the weight of the head to the ground. These manifestly include the vertebral column, the pelvis, and the bones of the thighs, legs, and feet. The circumstances that tend to produce those altered conditions of the bones which lead to deformities, comprise the constitutional derangements of the system which are connected with them, the chemical composition of the bones, and the influence of that composition on their physical constitution."* In a healthy condition of the system the bones are strong, and will bear a great weight, or even a violent shock, without breaking. When, however, from any cause, the chemical constitution of the osseous system is altered, the case is different. In children the proportions of earthy † and animal substances in healthy bones are nearly equal: in adults the earthy is to the animal material as 3 to 1. But in abnormal states of the osseous system—as rickets—the animal matter probably always predominates over the earthy:—thus, in a rickety child, Dr. Bostock found the proportion to be—animal matter, 79·75, earthy matter,

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* *Researches into the Pathology and Treatment of Deformities, &c.*, p. 4. London, 1852.

† The earthy constituents of bone are the phosphate and carbonate of lime, and the phosphate and carbonate of magnesia; the quantity of phosphate of lime being, according to Berzelius, nearly five times greater than that of the carbonate.

20·25; and in mollities ossium—the rickets of adults, as some think—Dr. Owen Rees has found the mean proportion of the animal to the earthy matter, as 70·68 to 23·815. On the contrary, the fragilitas ossium of adults, probably depends—at least in part—upon an increase of the earthy salts, and a consequent deficiency of the animal matter.

If the balance between the powers of different muscles be disturbed, distortions result. This is often seen in paralysis; where certain muscles having lost their power from disease of the nerves distributed to them, are overcome by their opponents, which by contracting draw the limb or tissues away from the diseased side. In spasmodic muscular contraction from irritation of the spinal cord, &c., the effect is different; since the affected muscles by their preternatural contraction overcome the force of their healthy opponents, and so produce distortion on the diseased side.

Strumous, rheumatic, or other arthritic inflammations, are constant causes of deformity; either by producing complete anchylosis, or by impairing the free mobility of the joint through thickening and stiffening of the ligaments, fibrous tissues, &c.

The effects of deformity upon the physical and moral development of the individual are of great interest to the physician; for although the connexion between deformity and character may be only accidental, yet it seems more probable that they at least sometimes stand in the relation of cause and effect. "It is undeniable," remarks Dr. Little, "that the consciousness of an infirmity of this nature has displayed itself in a most marked manner in many individuals who have been thus affected. Historians have described the influence of deformity in alternately stimulating the cultivation of the worst and of the best passions and instincts. The impeded development of the trunk from excessive deformity, or the wasting of a member during the growing period of life, often appears to occasion in the system a reserve-fund of nervous and nutrient energy, which may be devoted to the elaboration of those parts the development of which is not impeded. Hence the mental vigour, and surprising activity of the unaffected organs. Deformity of a part of the body may produce effects on the mind in a manner similar to those of a moderately sedentary mode of existence; the nervous and nutritive energies, unexpended in the muscular system, being employed to develop and sustain the mental faculties." *

2. Rachitis or Rickets.—This affection is characterized by general debility, emaciation, and all the conditions which result from impaired assimilation; together with softening of the osseous framework of the system, so that the natural shape becomes altered either by the action of the muscles, or by the limbs bending under the weight of the body. It is essentially a disease of infancy; is very rarely congenital; and is most frequently developed during the second year, after the early attempts at walking.

Symptoms.—The earliest indication that some morbid process is going on in the system is generally shown by an occasional feverish condition of the body, sadness and irritability of the temper, swelling of the abdomen, gastro-intestinal irritation and diarrhœa, general debility and wasting, and slightly-painful tumefaction of the wrists, knees, and ankles. The transition from apparent health to disease is gradual, and sometimes marked by the presence of some slight ailment; so that the practitioner must be on his guard. The long bones now become liable to curvature, probably from their bending under the weight of the body; the head enlarges; the face becomes pale, and the features attenuated; the eyes are unnaturally bright and have a lively expression; the respirations are quickened; the pulse is frequent and feeble; the appetite is bad or capricious, and the powers of digestion much impaired; the urinary secretion is more abundant than in health, and loaded with phosphates; and the debility and emaciation increase. There is no doubt that all the tissues lose their tone, and become weak and flabby, as the disease progresses; though the chief signs are shown by the osseous tissue. Thus the bones are always found more or less soft, spongy, and pliable; owing—as before mentioned—to the increase of their animal and the diminution of their earthy constituents, especially of the phosphate of lime. The tibia and fibula are usually the first to exhibit evidences of distortion, then the femur, and so on upwards: so that from this deteriorated state of body we may have a child affected with weak ankles or knees, or with knock-knees—*genua valga*, or with bow-legs, or with deformity of the ribs and sternum producing pigeon-breast, or with curvature of the spine,—the latter occurring only in about one case in ten, and at a much later period than the curving of the long bones.

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* *Lectures on the Nature and Treatment of Deformities, &c.*, p. 18. London, 1853.

In the last stage of the disorder the child either slowly sinks from exhaustion, or from some thoracic or abdominal disease; or, as most commonly happens, the functions of the body are at first slowly but afterwards rapidly restored to a normal state: the earliest signs of improvement generally being a more healthy condition of the secretions and excretions, and an increase in the tone and powers of the system. As the appetite improves, the flesh becomes firmer; the febrile symptoms all subside; growth proceeds rapidly; and the tumidity of the abdomen disappears. The disease of the bones too is now arrested, and healthy osseous matter actively deposited at those parts where the weakness has been the greatest, *i. e.*, at the part where the curvature is the most marked: and as the general health daily improves, so the bones become firmer and harder, until only the deformities produced by the curvatures remain, to show during life how the individual has been once affected.

M. Guerin divides the term of rickets into three periods, viz., *a*, the stage of incubation; *b*, the stage of deformation; and *c*, the stage of transition of the organs and functions to a healthy condition. Of 346 cases of rickets observed by this author,—3 had arisen before birth, 98 in first year, 176 in second, 35 in third, 19 in fourth, 10 in fifth, and 5 in the sixth: 148 were males and 198 females: and the average period of incubation was six months, during which a marked train of deranged actions manifested themselves. The total duration of the disease is from one to two or three years, or longer.

Diagnosis.—This is sometimes difficult in the early or precursory stage, as the symptoms closely resemble those presented by tuberculosis in one or other of its various forms.

The enlargement of the ends of the long bones, producing tumefaction of the knees, ankles, wrists, &c., serves to aid the diagnosis; while the subsequent curvature confirms it, since softening of the bones during childhood only occurs in rickets.

Prognosis.—When uncomplicated, a favourable result may be expected from judicious treatment: but when there is great deformity and great loss of vital power recovery will be doubtful. The earlier during infancy that the disorder occurs, the more unfavourable is the result likely to be.

Causes.—Anything which induces imperfect assimilation of food and impaired nutrition of the body may act as a cause of rickets: hence this affection is sometimes met with in such weakly children of wealthy parents, as suffer from defective action of the vital forces. Like scrofula, however, it is essentially a disease of the poorer classes: insufficient, and especially, improper food; foul, impure air; damp, dark, cold, or filthy dwellings; and all similar circumstances, readily serving to generate it. The children of parents who have weakened themselves by sexual excesses; or of those whose constitutions have been impaired by syphilis, or by a strumous taint, or by unhealthy occupations; are, doubtless, predisposed to this disease.

Treatment.—The prophylactic treatment consists in avoidance of the causes; by insuring residence in a healthy situation, warm but well-ventilated rooms, generous diet, and suitable clothing. When the disease is established, attempts must be made to check any complications—as dyspepsia, diarrhœa, &c.—that may be exhausting the system; at the same time that everything is done to strengthen the constitutional powers. Tepid chalybeate, or sea-water baths, or daily sponging with salt water; pure air—especially sea or country air; good nourishing diet, with plenty of milk; ferruginous tonics, sometimes in combination with iodine; and cod-liver oil, taken continuously for many weeks or even months; are the remedies on which I chiefly rely. Great benefit will be derived from passive exercise in the open air, as in a carriage or Bath chair, as often as the weather will permit; from small doses of rhubarb, occasionally combined with the hydrargyum cum cretâ, when the liver is torpid;

from sedatives, when the nights are restless; and, perhaps, from the employment of some salt which may furnish materials for the reossification of the bones. M. Piorry states, that he has long been in the habit of administering phosphate of lime with advantage to rickety children suffering from curvature of the spinal column. He gives it in the form of very fine filings of fresh bones; about one ounce daily, in milk, or in rice-milk. M. Piorry does not attribute all the improvement observed to this, as a highly nutritious diet is simultaneously employed: but certain it is, that in several patients in whom the spinal column had continued to deviate more and more every year, and who were subjected during several months to good regimen, free exposure to light, a dry and warm temperature, and especially to the use of the phosphate, the progress of the affection has become completely arrested. It is also probable that this remedy may prove useful in all forms of rickets; in the osteomalacia of adults; and in women threatened with the softening of the bones during pregnancy, combining it then with iron.* The insolubility of the phosphate of lime has hitherto prevented its direct administration; but according to M. Küchenmeister of Zittau, this objection may be removed by uniting the phosphate with carbonate of lime—F. 70—when a soluble combination and valuable remedy results.

With regard to the use of irons, splints, and other mechanical contrivances for supporting the legs of rickety children, many surgeons object to them because they believe that the limbs subsequently become straight spontaneously. There seems, however, reason to doubt the correctness of this opinion; and hence I am disposed to recommend irons to be worn, provided they are made with joints corresponding to the hip, knee, and ankle; so that while affording efficient support—for the legs bend because they cannot support the weight of the body—they need not unnecessarily interfere with the natural movements. When there is any tendency to curvature of the spine, a reclining or recumbent position must be adopted for many hours of each day; and, if necessary, mechanical support should be resorted to.

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* *Gazette des Hôpitaux*, No. 139. Paris, 1856.

3. Curvature of the Spine.—Curvatures of the spine are usually divided into three varieties; viz., *lateral curvature*—the convexity being to either side, but usually to the right; *posterior curvature* or excurvation; and *anterior curvature* or incurvation. *Lateral curvature* is the most common; appearing chiefly in young women, between the ages of ten and eighteen. Many young ladies, otherwise well developed, become the victims of this deformity, from *out-growing their strength*, as it is said; a phrase which means that the wants of the system are insufficiently supplied owing to the imperfect assimilation of food, and the use of too little exercise in the open air. The unnecessary and injurious custom still in vogue of confining the bodies of young women in stays or corsets, may serve to develop deformity: for these supports not only impede the normal movements of the thorax and prevent the full expansion of the chest, but by usurping the functions of the dorsal, lumbar, and other spinal muscles whose office it is to keep the spine erect, they materially weaken these muscles; it being a well-established law of the animal economy that diminished action leads to a diminution of tone and power. This opinion is also confirmed by the fact, that in warm climates where the clothing is loose and stays unknown, lateral distortion of the spine is very uncommon. Another cause of this deformity is the undue exercise and consequent over-development of the muscles attached to the ribs and spinal column on one side, subservient to the motions of one upper extremity—generally the right.

Posterior curvature chiefly affects the cervical and dorsal regions; and may be caused in infancy by the improper practice often adopted of raising the child by placing the hands under the arm-pits, and so compressing the ribs and forcing out the spine and sternum.

Anterior curvature is the most rare form of spinal curvature, and is generally associated with some constitutional affection producing disease of the bodies of the vertebræ.

The *consequences* of spinal curvature are often serious. Thus as the thoracic and abdominal cavities become more or less encroached on, the play and movements of the viscera become interfered with; while, as full inspirations are prevented, there is dyspnœa. Moreover, the action of the muscles is impaired; the general health suffers; and pain may be produced by the pressure exerted upon the nerves. Except when there is caries of the vertebræ, the spinal cord is rarely affected; and then sudden death may occur from the carious bodies of two or three vertebræ giving way and crushing the spinal cord, or from the occurrence of dislocation of the odontoid process of the axis owing to ulceration and destruction of its ligament.

In the *treatment* of spinal curvature the most important points to be borne in mind by the general practitioner, are these:—To maintain the general health at its highest point of efficiency by nourishing food, sea-air, ferruginous tonics, cod-liver oil, and phosphate of lime—as advised in the previous section; to strengthen the muscles and ligaments which act on the vertebræ by direct means, as by frictions, palpation, shampooing, and gentle gymnastic exercises of various kinds; to forbid the use of articles of dress which merely prevent the free play of the muscles; and lastly, to remove from the spinal column, by recumbency or some mechanical means, such weights or forces as tend to keep the various segments of the spine in an improper relation to one another.

In the treatment of curvature arising from disease and absorption of bone, it is indispensably necessary that the patient be kept in a state of perfect rest, and in a nearly horizontal position; and in carrying out this practice a spring bed, or Dr. Arnott's hydrostatic bed, or one of Hooper's large water-cushions will at times be found invaluable. With regard to the various spinal couches, and the numerous instruments recommended by different practitioners who specially endeavour to cure this deformity, I know so little, that I can give no opinion as to their necessity or utility; hence I must refer my readers for information on these topics to the writings of Lonsdale, Adams, Tamplin, Little, Bishop, Brodhurst, and others.

4. TORTICOLLIS.—Torticollis or wry-neck is characterized by an inclination and rotation of the head to one side, by which the ear is approximated to the upper part of the sternum. Any circumstance "that tends to disturb the equilibrium of the

muscles which are attached to the thorax and to the head, may induce the deformity at any period of life—spasmodic contraction, paralysis, rheumatism, voluntary inclination of the head to one side during painful affections of lymphatic glands, during vesication from cantharides and other irritating applications, or the cicatrix of a burn. Many of these causes act generally on the muscles of one side, and the deformity may, in the first instance, consist only of a simple leaning of the head to that side; but in consequence of the bulk and power of the sterno-cleido-mastoideus, and the freedom of its course, being unattached except at its extremities, this muscle promptly usurps a predominant influence, even when not specially affected, and converts a simple yielding of the head into a complicated deformity."*

Treatment.—In transient spasmodic contraction of the tissues of the neck, no treatment will be required. But when the contraction is permanent, as in cases resulting from the tension of citatrices, or from structural shortening of the sterno-mastoid muscle, a cure may often be effected.

Supposing it is certain that the sterno-mastoid is shortened, sub-cutaneous section of one or both of the origins of the muscle may be employed; taking care afterwards daily to apply a bandage or other contrivance, by which the head may be maintained in its proper position. The deformity resulting from a citatrix must be relieved by the sub-cutaneous or open division of the cicatrix, followed by the use of gradual extension. Dupuytren's recommendation to make several transverse incisions at short distances through the whole breadth and depth of the abnormal band of tissue, is said by Dr. Little to be unnecessary; as he has invariably found one section, when made where the cicatrix is most free from adhesion to deep-seated structures, quite sufficient.

5. Club-foot.—Talipes or club-foot—a deformity produced by rigidity and contraction of various muscles—may be congenital, or it may arise shortly after birth, or at any subsequent period of infancy. There are numerous varieties of this distortion, the chief being,—*talipes equinus*, in which the heel is elevated so that the patient walks on the ball of the

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* Dr. Little. *Opus cit.*, p. 188.

foot; *talipes calcaneus*, in which the front part of the foot is elevated and the heel depressed, so that the latter receives the weight of the body; *talipes varus*, in which the foot is inverted, so that the patient walks on the outer edge of the foot; and *talipes valgus*, in which the foot is everted, so that the patient walks on the inner ankle. Besides these distortions, which exist in various degrees of severity, there are compound varieties partaking of two of the preceding forms; their nature being explained by their names, as *talipes equino-varus*, *talipes equino-valgus*, *talipes calcaneo-varus*, &c.

Causes.—The exciting causes of non-congenital talipes, are any circumstances that prevent the proper nutrition of the muscles, or that interfere with their supply of nervous influence. Thus club-foot may arise from wounds and accidents, chronic inflammation, rheumatism, &c.; from the contraction of the cicatrices of burns; or from spasm and paralysis, producing a loss of balance between the antagonising muscles.

Treatment.—When the case is seen before the contracted muscles have become rigidly fixed, the deformity may often be overcome by the use of gutta-percha splints, bandages, &c.; by attempting to strengthen the muscles by frictions, and douches of cold water; and by removing the cause of the distortion. These means failing or proving inappropriate, sub-cutaneous tenotomy must be resorted to, at an early period; the division of tendons seldom producing any dangerous consequences even in young infants. The rationale of this operation and the mode of performing it, are thus explained by Dr. Druitt. "The tendon being divided, its separated extremities heal by a new connective tissue, which renders it longer, and which, while recent, may be stretched to any desired length. Thus the mechanical shortening of the muscle is neutralized. At the same time, the antagonist muscles, which become wasted and inert, are relieved from a constant state of tension; and are enabled to resume their natural functions, so that the limb rapidly increases in strength and bulk. The operation is easily performed thus:—The tendon is put on the stretch, and a narrow sharp-pointed knife is thrust through the skin on one side of it; then its edge is turned against the tendon, and made to divide it as it is being withdrawn. The tendon to be divided is the tendo Achillis in the talipes *equinus*. The same in the *varus*, and those of the tibialis posticus, anticus, and flexor longus digitorum. In the *valgus*, the peronæi and the extensor longus digitorum; any tendons, in fact, which oppose the restoration of the foot to its proper position. It is often expedient to divide a portion of the plantar fascia, or of the muscles of the sole of the foot. Immediately after the operation, the foot should be put quietly up with splint and roller, with a dossil of lint and strip of plaster over the punctures, and be retained in the same position of deformity as before the operation. In the course of four or five days, apparatus must be adapted for bringing the part into proper shape."*

6. Flat-foot is that condition, in which the arch of the foot being lost, the sole rests flat on the ground. It is most frequently met with in such children of the poor, as have been obliged at an early age to gain a livelihood by some laborious occupation, and especially by lifting heavy weights. As it comes on gradually, it is seldom detected in time to admit of cure; a great misfortune, since this deformity tends to prevent proper walking, and hence completely unfits a man for the life of a soldier, &c.

7. Contracted Fingers.—The superior extremities are much less liable to distortion than the inferior. Contraction of one or more of the fingers—especially of the little finger—is sometimes congenital. Most commonly, however, it comes on at any period after birth, from disease of the palmar fascia; the middle, ring, and little fingers being the most subject to contraction. This deformity progresses slowly and gradually, with stiffness in the palm of the hand, and inability to straighten one or more of the fingers: as it increases, the finger becomes drawn into the palm, one or two years perhaps elapsing between the commencement and the completion of the distortion.

Treatment.—Little treatment will be of any avail, except sub-cutaneous section of one or more of the bands of contracted fascia extending towards the fingers, and of the subjacent flexor tendons. Subsequently—at the end of two or three days, when the puncture has healed—the contracted finger must be gradually straightened, and bandaged on a splint.

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* *Opus jam cit.*, p. 618.

In imbecile or idiotic children the muscles of the hands are often found spasmodically contracted. This condition is best relieved by frictions, by improving the general health, and by attempting to educate—as it were—the fingers, as efforts are made to improve the general intelligence.

8. IMPEDIMENTS OF SPEECH.—The cause of those impediments or defects of speech which are commonly spoken of as *stammering* or *stuttering*, has been supposed by many to consist in some abnormality of one or other of the organs composing the vocal apparatus; one practitioner appearing to regard the tonsils, uvula, or velum, as the organs chiefly instrumental in causing the defect; another referring the mischief to abnormal dentition; and a third looking to the frænum linguæ, or to some of the muscles of the tongue as the parts at fault. But there is little doubt that in the very great majority of cases, if not in all, the affection is a nervous affection,—that is to say, it is of a functional and not of an organic nature; for even in the worst forms of stammering the vocal apparatus is generally found sound and healthy. Hence the shocking operations or mutilations which have been practised to remedy the defect have not only failed to effect any good, but in all probability have done great mischief: for it would be just as reasonable to expect to relieve St. Vitus' Dance by dividing the affected muscles, as to imagine that any operation on the tonsils, teeth, or speech muscles can relieve a defect which seems very much allied to chorea in its nature and in its origin.

Stammering may be congenital, or it may follow early illness. Nervous affections of different kinds are not very uncommon after the eruptive fevers, or after any severe disease that has given a shock to the constitution.

Dr. Arnott well observes that command over the organs of speech is acquired in the same manner as over all the muscular organs of the body; as, for example, in walking, skating, fencing, and performing on musical instruments. How important it must be then to pay some attention to the training of the organs of articulation in early life; to take some pains to aid children in acquiring the proper adjustment of the organs of speech; to take care that the child is not allowed to associate with one who stutters; and to attempt to check the defect as soon as it is noticed, firstly—by attending to the general health so as to raise it to the normal standard, and secondly—by making the child speak slowly and distinctly, and especially, perhaps, by carefully teaching him to read aloud. In carrying the latter suggestion into practice, it is important that the lessons be not given in the company of other children. As an able writer observes,—"All scenes where speech is obligatory ought to be avoided: for example, I cannot too strongly reprehend the conduct of parents who send children who stammer badly to school, where, amidst the rest of the class, they are obliged to exhibit daily,—a scene which is torture to those who have very sensitive minds. You may see the rush of blood to the face of the boy when called upon to construe: he may see the meaning of his lesson plainly, and yet be utterly unable to show his knowledge of it; he may be disgraced on account of this inability (for what public master can enter into all the internal emotions which cause paralysis of speech in one of a class of perhaps fifty boys!); he will feel a cold trickle at his head which tells him he is unlike others, and has no one to sympathize with him; he will care little for the undeserved punishment, but few can know how much for the source of all this, and of trials to come, to what amount he knows not. Scenes and reminiscences such as these may easily confirm an impediment in the speech."*

When a habit of stammering has once been acquired, the anxiety and distress it occasions makes the difficulty of cure all the greater; but even then I believe that a special training and supervision, with a judicious study of elocution, may remove it, more especially if the student will aid his progress by always trying to think more of *what* he is saying than *how* he is saying it.

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* *Stammering and its Treatment*, p. 58. London, 1850.

CHAPTER VIII.

DENTITION.

1. INTRODUCTION.—The process of dentition being but a part of the gradual evolution or development of the body, it might be thought that this strictly natural action would always be conducted according to an unvarying law, and that it would be unattended with suffering. This is not the case, however; for although in the majority of instances, the law—corresponding to the law of development which governs the form and position of the organs—is followed, yet it sometimes happens that the normal arrangement is subverted; while few children pass through the period of dentition without experiencing a greater or less amount of local and constitutional disturbance. In proof of part of this statement it may here be mentioned that though the first teeth usually appear about the seventh or eighth month, yet that cases are recorded where the development is much more precipitate, or on the contrary, more tardy and irregular. Thus there are very many instances recorded—Haller cites nineteen examples—in which one or more of the central incisors have been found through the gums at birth, and have had to be removed to prevent injury to the mother's nipple; while Dr. Crump has published in the Transactions of the Va. Society of Dentists an account of a case of full dentition at birth, which was seen by himself, in North Carolina. With regard to the opposite condition—tardy development—Dr. Ashburner mentions that he has seen a child twenty-two months old beginning to cut its first tooth, which was an incisor in the upper jaw; the infant being very delicate, with a large head, tumid abdomen, and peculiarly small-sized extremities.* Serres, again, quotes cases of persons passing through some years—in one instance, seven—of life before cutting their first teeth;† while one instance is recorded by Boxalli, and another by M. Baumes,

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* *On Dentition and some coincident Disorders*, p. 42. London, 1834.

† *Essai sur l'Anatomie et la physiologie des Dents*, p. 75. Paris, 1817.

in which the patient reached old age without a single tooth having ever appeared.[*]

The human subject is provided with two sets of teeth—the *temporary*, consisting of twenty, and the *permanent*, of thirty-two; the latter appearing as the former are shed. Some few instances, also, of a third set appearing upon the removal of the permanent teeth have been related; but dentists, without denying the possibility of such an occurrence, do not generally credit it. Deficiencies in the number of the teeth are not uncommon; and on the contrary supernumerary teeth have been observed.

2. ERUPTION OF TEMPORARY TEETH.—The germs or rudiments of the teeth appear at a very early period of fœtal life, for—according to Serres—Nature works at their formation almost immediately after conception;[†] so that the jaws of the fœtus at the third or fourth month contain—although in a very limited space—the rudiments of all the temporary and many of the permanent teeth with which the child and the adult are to be supplied. As the embryo grows, so of course the formation of the teeth progresses *pari passu;* but at birth none should have appeared above the gums. When the child, however, is about seven months old, the two central temporary incisors of the lower jaw make their appearance through the gum; being followed, in a week or two, by the corresponding teeth of the upper jaw. "In a month or six weeks after the eruption of the central incisors we may expect the lateral incisors to make their appearance; those of the upper jaw being evolved first. About the twelfth or fourteenth month the anterior molars of the under jaw are cut, and shortly afterwards those of the upper maxilla. The canines appear between the sixteenth and twentieth; and between the twentieth and thirtieth the second milk-molars pass through the gum. Thus, according to this statement, the twenty milk-teeth are complete by the thirtieth month."[‡] From this it will be seen that the temporary, deciduous, or milk-teeth, are twenty in number—four incisors, two canines,

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[*] Quoted by Tomes in his *Lectures on Dental Physiology and Surgery*, p. 112. London, 1848.

[†] *Opus cit.*, p. 2.

[‡] Tomes. *Opus cit.*, p. 110.

and four molars in each jaw: and that they are not all cut until the end of the thirtieth month, or even later,—the whole period during which they are being gradually evolved being known as that of the *first dentition.*

3. Eruption of Permanent Teeth.—After the completion of the first dentition at the end of the thirtieth month, there seems to be a pause until between the sixth and seventh years; when—as stronger organs of mastication are needed—the second or permanent teeth begin to make their appearance in the elongated and expanded maxillæ. At this period, as Mr. Bell remarks, the jaws contain no less than forty-eight teeth; namely, twenty deciduous—the whole of which are perfected—and twenty-eight permanent in different degrees of development within the bones. In considering the mode in which the permanent teeth appear, it must be remembered that the twelve true molars are not preceded by temporary teeth; and hence that these teeth are cut like the teeth of the first dentition, and not by displacing the latter. In short, as the growth and expansion of the jaw will permit, the first four molar-teeth begin to appear at the back of the existing twenty milk-teeth, and usually before any of these have fallen out; being followed at a later period, as the jaws grow, by the second four molars, and subsequently by the third four, or wisdom-teeth. The remaining permanent teeth are thus cut: as the period of second dentition approaches, the bony partitions separating the sacs of the permanent from those of the milk-teeth are absorbed; the fangs of the milk-teeth are also removed by absorption; and the permanent teeth, now placed directly under the loose crowns of the temporary ones, gradually rise up within the alveoli, push up the milk-teeth until they become loosened and detached, and thus take their places.

The periods of eruption of the permanent teeth, though liable to some variety, are said by Mr. Bell to be as follows: the anterior true molars at six and a half years of age; the central incisors, the lateral incisors, at eight; the anterior and posterior bicuspids at nine and ten; the canines from eleven to twelve; the second true molars from twelve to thirteen; and the last molars—or wisdom-teeth—from seventeen to nineteen.* It may be remarked that the teeth of the lower jaw are generally earlier by four or six weeks than those of the upper; and that any irregularity in the time of appearance of the permanent teeth need give rise to no anxiety.

Thus, we see, that when the permanent teeth are all developed there are sixteen in each jaw, viz., four incisors, two canine, and four bicuspids, all of which make their appearance by displacing the temporary teeth; and six true molars which are cut in the same way that the temporary teeth were. Moreover, it may be noticed that the rudiments of the last true molars, or wisdom-teeth, are probably not even developed until after the first true molars have appeared through the gums.

4. Disorders of the First Dentition.—Perfectly healthy infants, in whom the powers of life are energetic, may cut their teeth without any perceptible disorder; but in the majority of cases there is not only some local irritation, but a greater or less amount of general disturbance.

The following is the usual course:—before the tooth appears through the gum, the latter is found hot and swollen; there is an increased flow of saliva; the cheeks frequently become flushed; the child is restless, capricious, and fretful, and constantly thrusting its fingers, or any hard substance it can obtain, into its mouth, in order to allay the excitement and irritation of the gums; the sleep at nights is broken and disturbed; the appetite fails; and there are symptoms of intestinal disturbance, as evidenced by attacks of vomiting and diarrhœa. In more unfavourable cases the general disturbance is greater; the restlessness being extreme, the skin hot and dry, the mouth parched and often covered with aphthæ, the tongue foul, and the appetite very bad—so that the child either refuses the breast, or takes it only for a minute or two at a time, and at irregular intervals. Unfortunately, too, the process may become complicated by the occurrence of some important sympathetic affection, or of some independent disease. It can readily be imagined that, in the excited condition of the system arising from dentition, acute or chronic inflammation may attack any organ in the body; and such is really the case, inflammatory diseases of the brain and nervous system, and of the organs of respiration being by no means uncommon. Severe bowel complaints are also at this time rife; there is often dysuria; cutaneous diseases are not unfrequent; spontaneous salivations arise; and spasmodic affections—varying from mere twitchings of the muscles or sudden startings during sleep to severe epileptic convulsions—often justly give rise to great alarm in the minds of the parents.

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* *The Anatomy, Physiology, and Diseases of the Teeth*, p. 79. 2nd ed. London, 1835.

Any local obstacle to the progress of dental development, such as may arise from induration, or from inflammation of the gums, or from any disproportion between the size of the jaws and the form or number of the teeth, greatly augments the constitutional disturbance. Occasionally, in debilitated subjects, the summit of the gum over a tooth, or the edge of the gum when partly pierced by a tooth, becomes the seat of very painful inflammation and ulceration; producing an affection which has been described by some authors under the name of *Odontitis Infantum.* The pain of this inflammation is sometimes so severe, and tends so strongly to augment the fever and general disturbance, that the child's life may be endangered—and even lost—without the most judicious treatment.

With respect to the cutaneous eruptions connected with dentition, it need only be mentioned, that they often seem to give relief rather than to do harm; and hence they need not be treated too actively. The different forms of eczema, strophulus, herpes, and simple erythema, may of course occur independently of dentition; but it is also certain that they often make their appearance just before the cutting of a tooth, and disappear or become milder after the process is completed.

When the process of teething goes on favourably, medical interference will be unnecessary. The child should be much in the open air, provided the weather is favourable; sponging the head daily with cold water will be found beneficial; caps and warm coverings to the head should be forbidden, as they only tend to favour determination of blood to the brain and its membranes; the gums should be frequently rubbed with the finger or with a hard crust to lessen the irritation; the diet should be simple; and the bowels should be kept regular. Dr. John Clarke, in his "Commentaries on the Diseases of Children," ascribes most of the disorders which accompany dentition to over-feeding and consequent plethora; to improper kinds of food, which produce irritation; and to keeping the head too warm. He asserts, that coolness of the head, and washing it daily with cold water, renders children much less liable to illness during this period. Spontaneous salivation and moderately lax bowels are also considered by him as favourable occurrences, for he thinks they lead materially to diminish irritation; hence, when absent, he advises that gentle aperients should be given, especially in the case of plethoric children or those with cutaneous eruptions.

When the dentition is difficult, the treatment becomes more important. There are two indications to be followed: first, to relieve the local irritation; and second, to subdue the constitutional disturbance. If, on examining the mouth, the gum is found hot, red, tender, swollen, and indurated, the practitioner may feel pretty certain that this condition is the cause of the general symptoms; and, consequently, that if he relieves the painful tension, much of the symptomatic fever, &c., will disappear. The gum is therefore to be freely lanced; taking care to divide the tissues down to the surface of the pressing tooth, even if this be at some little depth. When this operation is properly performed immediate relief often follows; but should the general disturbance persist, mild laxatives must be resorted to if there is much fever with constipation, cooling salines, and occasionally sedatives. Where there is much thirst I always allow the child to drink freely of cold water, and invariably with benefit: where there are symptoms of determination of blood to the brain, I employ warm baths with cold applications to the head: where symptoms of debility predominate, I believe that mild tonics do great good: and in all cases I take care to keep the secretions and alvine evacuations healthy, resorting to mild aperients if constipation exists, or to astringents if the infant is being weakened by diarrhœa.

Should the irritation of the gum run on so as to give rise to inflammation and ulceration—odontitis infantum—chlorate of potash must be administered in often repeated doses—F. 80; while solutions of borax or of nitrate of silver—F. 78, 79, are applied to the affected part. Some practitioners recommend the application of leeches to the gum, and the free employment of antiphlogistic remedies; but I fear their use will not be attended with much success in the present day. It ought, perhaps, to be mentioned, that the gum-lancet should not be used, as the cut edges will only ulcerate and increase the mischief.

In the management of the serious diseases which sometimes complicate the process of dentition, it is only necessary to say that the same rules must be followed as in the treatment of these affections at other periods. Such cases will of course be more alarming because of the complication; but this must only make the physician more watchful, and especially, I believe, more cautious in the use of lowering measures. Care must also be taken to notice the condition of the gums, so that if they become inflamed from a presenting tooth, they may be at once lanced.

5. Disorders of the Second Dentition.—The eruption of the permanent teeth does not usually give rise to any distress; although instances occasionally occur where there is not only much local irritation, as evidenced by great pain in the gums and enlargement of the parotid and sub-maxillary glands; but also where serious general disturbance ensues, as shown by the occurrence of epilepsy, severe ophthalmia, cutaneous diseases, &c. The cases usually attended with distress are those where—the maxillæ being insufficiently developed—the molar-teeth are cut with great difficulty and pain, thus producing fever and derangement of the digestive organs: or where, from general impairment of the health, the constitution sympathises readily with the slightest irritation in any part of the system: or where the first true molars are cut during the progress of any severe disorder. Dr. Ashburner relates several examples of severe convulsive diseases caused by difficult dentition; all or most of which seem to have been cured by the free use of the gum-lancet. The following case

may be quoted as a good example of the success of this practice in the hands of this physician :—A boy, twelve years of age, was cutting the second, or posterior permanent molars of the upper jaw, before those of the lower, and the process was accompanied by twitchings of various parts of the body. At last he became affected with chorea. Being a very nervous lad, if any notice were taken of him, he would involuntarily make the most extraordinary grimaces, and contort his body into various attitudes that appeared to be most difficult and painful. This chorea continued for three months, during which time a variety of medicines were swallowed. At last he fell into an epileptic fit, struggling much, foaming at the mouth, and grinding the teeth. I thrust my fore-finger along the inside of his cheek, and found a hard cartilaginous space on each side, behind the first molar-teeth. I succeeded in gashing these parts: he uttered a scream, and fell out of his fit, becoming quite sensible; nor had he a recurrence of his chorea.

From the foregoing observations it is hoped that the student will not be led to regard lancing of the gums as the panacea for every ailment that a child may suffer from during either the first or second dentition. The gum-lancet is not to be used without due consideration, nor without some definite object, and never merely to hasten the process of dentition; for such practice is not only unscientific and useless, but positively mischievous. But when the gum—whether indurated or not—seems to oppose the passage of the tooth; or when the superimposed gum is tense, shining, and tender; or when it is swollen and congested, and is attended with salivation and heat of mouth, then the lancet will give great and almost immediate relief. Moreover, if called upon to treat some constitutional affection, occurring during the process of dentition, the practitioner will be quite justified in lancing the gums if the symptoms are such as lead to the belief that the pressure of the tooth on the gum is producing morbid sympathies, and thus increasing the general disturbance; or, if he considers that the irritation of the tooth is actually the *fons et origo mali*, he had better cut down upon it at once, without waiting for any positive evidence.

CHAPTER IX.

DISEASES OF THE EYE.

SECTION I.—DISEASES OF THE EYELIDS.

1. SYPHILITIC ERUPTIONS AFFECTING EYELIDS OF INFANTS.—The effects of congenital syphilis usually show themselves a few weeks after birth in the form of dark-brown scabs and excoriations, and flat broad pustules, which appear about the anus and organs of generation, and upon the face and hands. "The eyelids of such children," says Dr. Mackenzie, "inflame and adhere in the morning; the conjunctiva, without being swollen or much inflamed, secretes puriform mucus; the Meibomian and ciliary glands give out matter; the cilia and the hair of the head fall out; the nostrils become stuffed, so as to prevent the child from sucking; the mouth aphthous; the voice hoarse; there is much restlessness, itching, and fretfulness; and great emaciation ensues. The capsule of the lens is sometimes to be observed quite red, the pupil becomes contracted, the retina is probably insensible, and atrophy of the eyeball ensues. Not unfrequently the corneæ become infiltrated with pus, and give way—an event indicative of excessive debility, and generally a precursor of death."*

Treatment.—Mercury must be administered either by the mouth or by inunction. As I shall afterwards show, I much prefer the latter plan. One scruple of mercurial ointment may be gently rubbed over the abdomen night and morning. If given by the mouth, two grains of the hydrargyrum cum cretâ may be given three times a day; or half a grain of calomel with sugar, in the same way. Those who nurse the child are probably liable to be infected by it.

2. WARTS ON THE EYELIDS.—These are not very uncommon. Touching the excrescence once daily with creosote usually suffices to effect a cure in a short time.

3. HORDEOLUM.—A small boil, furunculus, stye, or hordeolum, often projects from the edge of the eyelid. It causes itching and smarting, followed by great tension and pain; it

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* *On Diseases of the Eye*, p. 132. 4th ed. London, 1854.

impedes the movements of the lids; and often gives rise to fever and great restlessness. The little tumour suppurates slowly; and, after discharging a small quantity of thick pus, subsides and disappears. Children of a strumous habit, or of weak constitutional powers, are subject to them.

Treatment.—Frequent bathing with hot water; a bread-and-water poultice at night; and a brisk purgative to clear out the alimentary canal. It is seldom necessary to open the abscess.

4. Pediculi Ciliorum.—The children of careless and dirty parents may suffer from these loathsome and irritating insects fixing themselves to the eyelashes. They give rise to an appearance as if the cilia were loaded with a morbid secretion; but on inspection the insects may be perceived. The application of mercurial ointment will destroy them.

5. Ptosis.—Ptosis, or a falling down of the upper eyelid, is usually due to paralysis of the levator of the upper lid, and as such is generally a symptom of cerebral disease. I am not, however, going to describe this affection; but merely wish to allude to a form of ptosis which is sometimes congenital, and which is very inconvenient, since the depression of the upper lid impedes the function of vision. It may occasionally be cured by removing a transverse fold of the integuments, and getting accurate union between the edges of the wound.

6. Ophthalmia Tarsi.—The edges of the eyelids are subject to very obstinate inflammation; which, by affecting the Meibomian follicles, sometimes closes them, destroys the bulbs of the eyelashes, and produces that appearance popularly known as *blear eyes*. Children are much more liable to this affection than adults: it usually coexists with some form of scrofula.

Symptoms.—In the morning the edges of the eyelids are found adherent, owing to a glutinous secretion furnished by the conjunctiva, Meibomian follicles, and ciliary glands; and as the eyelashes are agglutinated together by this matter, the eyes cannot be opened without great pain until the parts are freely bathed with warm water. This secretion, moreover, with the inflammation causing it, produces great local irritation; a frequent discharge of tears, which drop over on the cheeks instead of being conducted along the edges of the lids to the puncta lachrymalia; and frequently numerous little ulcers at the roots of the eyelashes. Should the inflammation extend to the conjunctiva lining the lids, a sensation of roughness—as of sand in the eye—will be complained of; together with heat, redness, soreness, and intolerance of light. The general health always suffers; the functions of the skin and digestive organs are impaired; and there is often strumous enlargement of the lymphatic glands, tumid abdomen, &c. Inversion of the eyelashes—trichiasis; shortening of one or other eyelid, so that the eye cannot be completely covered—lagophthalmos; excoriation of the edges of the lids—blear eyes—lippitudo; and obliteration of the Meibomian apertures, may result from long-continued ophthalmia tarsi.

Causes.—It often results, secondarily, from other forms of ophthalmia, from strumous inflammation of the conjunctiva, from affections of the eyes occurring during small-pox, measles, &c. When primary, the common causes are cold, damp, impure air, insufficient and improper food, and sexual excesses.

Treatment.—The patient must be directed to bathe his eyelids well with warm water, and to soften the concreted purulent matter with glycerine or some oleaginous material, before attempting to open the eyes in the morning; afterwards fomenting the parts with decoction of poppy capsules for half an hour or more. If the inflammation runs high, a bread-and-water poultice may be laid over the eyelids at night; the palpebral conjunctiva should be scarified; and astringent or emollient collyria frequently applied, according as either the discharge or the pain appears to predominate. The application of sulphate of copper to the edges of the lids often does good; or the unguentum hydrargyri nitratis of the Pharmacopœia, diluted with two or three parts of lard, may be used twice in the day. In employing ointments, great care must be taken to insure cleanliness; for a salve smeared over a dried purulent secretion does more harm than good. The oxide of zinc ointment, if carefully used at night, will tend to prevent the edges of the lids adhering in the morning.

A cure will seldom be effected without attention to the general health. Quinine, steel, the mineral acids, and other tonics often do great good; cod-liver oil is frequently beneficial; alteratives, as iodide of potassium, or small doses of mercury, may be required; and purgatives must be used if necessary. The diet is to be regulated: nourishing·food, capable of being easily digested, should be allowed; and a little wine or beer may be ordered. Moreover, warm clothing, warm bathing, exercise in the open air, and early and regular habits, will do much to hasten the cure.

7. EPIPHORA.—Epiphora consists of an over-discharge of tears—excessive lachrymation—from some irritation or disease of the secreting lachrymal organs. It may arise from the presence of some mechanical or chemical irritant, as a particle of dust, an inverted eyelash, the vapour of ammonia, &c.; or it may be produced by some constitutional cause, as disordered digestion, intestinal worms, and such like; or it may be a symptom of some other disease of the eye, as of strumous ophthalmia.

Epiphora must not be confounded with *Stillicidium lachrymarum*, in which there is merely some incapability in the excreting parts of the lachrymal organs to remove the tears and the mucus of the conjunctiva.

The tears are very irritating; and when from any cause they run over the cheek for any length of time, they give rise to inflammation and excoriation. The practitioner must be sure, however, that the mischief is from the tears; for in a supposed case of this kind at Glasgow it was afterwards found that the deep lines of excoriation which ran down the child's cheeks were the effects of a deliberate application of sulphuric acid by the nurse.*

Treatment.—Remove the cause, when possible. If the conjunctiva be very irritable, a drop or two of a solution of nitrate of silver (gr. ij.—iv. to ℥j.), put in the eye once or twice a-day, will do good. Some cases are benefited by the vapuor of warm water, impregnated with opium: a teaspoonful of laudanum is put into a cupful of boiling water, and the eye held over it. Small blisters on the temples are recommended by several surgeons. The diet must be regulated; tonics will often be needed; and purgatives should be employed to maintain a healthy condition of the secretions and a regular action of the bowels.

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* Mackenzie. *Opus cit.*, p. 106.

SECTION II.—DISEASES OF THE CONJUNCTIVA.

1. FOREIGN SUBSTANCES ADHERENT TO CONJUNCTIVA.—Particles of dust or coal, small insects, the germs of grasses, &c., cause great annoyance by "getting into the eye;" sensitive children especially, sometimes suffering severely from these slight causes. The foreign body will generally be found under the upper lid, on everting which over a probe it can readily be removed. Should a particle of lime fall into the eye, it may produce most extensive mischief, unless speedily removed; and even a troublesome ulcer may then result. Where pain is experienced *after* the removal of the irritating substance, it may be allayed by painting the eyebrows and lids with extract of belladonna, moistened with a little water; since this agent acts as an excellent anodyne on the branches of the fifth pair of nerves.

2. CATARRHAL OPHTHALMIA.—This form of ophthalmia is generally regarded as the type of inflammation of the conjunctiva; the morbid action being almost—if not entirely—confined to the conjunctiva and Meibomian follicles. It is the most common of all the diseases of the eye in the adult: it occasionally occurs in children: and it usually affects both eyes, but one more severely than the other.

Symptoms.—The eyelids are stiff, red, and slightly swollen; the eye is bloodshot; the natural secretion from the conjunctiva and Meibomian follicles is increased in quantity, and becomes puro-muculent; there is slight intolerance of light—photophobia; and an occasional discharge of tears gives temporary relief. The pain is slight; the patient complaining more of stiffness and dryness, and of a feeling of pricking or roughness—as if sand or broken glass were under the upper eyelid—than of acute suffering. This sensation arises from the presence of flakes of puriform mucus, and especially from the rubbing of the sensitive eyelids over the enlarged vessels of the sclerotic conjunctiva. These vessels are seen to be large, of a bright-scarlet colour, and irregularly arranged; differing thus from the appearance of the vessels in sclerotitis, in which they are minute, of a pink hue, and disposed straight and regularly, like radii in a circle. The constitutional disturbance is slight; headache is complained of; and there is commonly exacerbation of the symptoms towards night.

Causes.—Exposure to cold and wet, vicissitudes of temperature, &c. Blows and injuries may also give rise to it. Occasionally, conjunctivitis appears to prevail epidemically: and probably the discharge is contagious.

Treatment.—Catarrhal ophthalmia readily yields to treatment. The child is to be kept quiet, put on mild diet, and purged with a dose of calomel and jalap. Local astringent remedies then effect a cure: a large drop of a solution of nitrate of silver (gr. iii.—iv. to ℥j. of distilled water) is to be allowed to fall into the eye about twice a-day. A piece of lint, soaked in tepid water, may be kept applied over the eye; or a bread-and-water poultice, in a muslin bag, if found more agreeable; or a fomentation of warm decoction of poppy capsules may be used if the pain is at all severe.

3. Ophthalmia of New-born Children.—When only a few days old, infants are liable to be affected with an inflammation of the conjunctiva, usually known as *ophthalmia neonatorum*, or the *purulent ophthalmia of infants.*

Symptoms.—About the third day after birth, it is noticed that the upper eyelid is slightly swollen, that the infant keeps the eyes closed, and that the lids are slightly gummed together by inspissated muco-purulent matter. On separating the eyelids,* the conjunctiva lining them is found very vascular and tumid, and a drop of thick white fluid escapes. As the inflammation extends to the conjunctiva covering the eyeball, the swelling of the lids increases; the lachrymal caruncle and semilunar fold are enlarged; there is chemosis; the discharge becomes more abundant and decidedly purulent; and the infant appears restless, fretful, unwilling to suck, and feeble. Hitherto the transparent parts of the eye have not been involved. At the end of eight or ten days, however, if the case has been neglected or improperly treated, the cornea becomes the seat of ulceration or purulent infiltration; either of which processes, by extending rapidly, destroys the texture of the cornea, so that the iris becomes exposed, the humours bulge through the pupil, and the sight is completely lost. Both eyes commonly suffer; either at the same time, or within an interval of a few days.

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* To examine an inflamed eye in a young child, some little skill and tact is required; together with gentleness, for the organ is delicate and highly sensitive. Mackenzie, Wharton Jones, Tyrrell, and others, recommend some such plan as the following:—The practitioner is to seat himself on a chair, with a long towel laid across his knees. Opposite to him the nurse sits in such a way that when she lays the child in her lap, its head may be held between the knees of the surgeon. The hands and arms of the child being confined by the nurse, the surgeon dries the eyelids with a piece of soft linen, and then separates them by applying the point of the forefinger of one hand to the border of the upper eyelid, and the point of the thumb of the other hand to the border of the lower lid. The eyelids being opened, they are readily kept so during the examination, by the command which the tips of the finger and thumb, resting against the edges of the orbit, have of their borders. If necessary, the lids may be easily everted, to learn the condition of the palpebral conjunctiva.

Causes.—There can be but little doubt that this disease may arise from inoculation of the conjunctivæ by leucorrhœal discharge during parturition; or that its worst forms may be due to the application of gonorrhœal virus in the same way. Hence, when called upon to attend a woman who may be suffering from severe leucorrhœa or from gonorrhœa, we should take care frequently to use injections of tepid water, or of water containing a little carbonate of soda, during the first and second stages of labour; and should also direct the nurse to wash the infant's face freely with plain warm water directly it is separated from the mother.

Sometimes the inflammation can only be attributed to exposure to cold air, or to a very bright light, or to the intrusion of soap or some such irritant into the eye. M. Trousseau states that when puerperal fevers are prevalent in hospitals, new-born infants are very liable to suffer from an ophthalmia which at first seems simply catarrhal, but which in three or four days ends in perforation of the cornea.*—The disease may be propagated to adults or children by the discharge, which is highly contagious.

Prognosis.—If the disease is recent, and the corneæ free from ulceration or purulent infiltration, the sight may be saved. The signs of the disease yielding are, a diminution in the swelling of the lids, a lessening of the chemosis and redness of the conjunctiva, and a decrease in the quantity of the purulent discharge.

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* *Gazette Médicale de Paris*, p. 52. 24 Janvier, 1852.

If ulceration or infiltration of the cornea has occurred, the prognosis must depend on the extent of the mischief; for if the ulceration be extensive, or the infiltration complete, the cornea will be thrown off by ulceration or sloughing, and protrusion of the iris and humours will result.

Treatment.—Great cleanliness must be enjoined: three or four times, at least, in the twenty-four hours, the eyelids are to be separated, the purulent discharge removed with a piece of sponge, and the edges to be washed with a weak solution of alum or of bichloride of mercury,—F. 99 or 100. After each cleansing, a solution of nitrate of silver (gr. ij.—gr. x. to ℥j.) is to be applied by means of a camel's-hair pencil to the surface of the inflamed conjunctiva; a weak solution sufficing in all recent cases. To prevent agglutination of the eyelids, Dr. Mackenzie recommends the application of the red precipitate ointment along their edges, whenever the infant goes to sleep; but probably the use of lard will be equally efficacious. The little patient's bowels are to be opened by castor oil, magnesia, or a few grains of grey powder and rhubarb; the breast only is to be allowed; and the nurse's diet should be regulated, by restricting the quantity of animal food, and forbidding the use of wine, beer, or spirits. When this plan of treatment is adopted sufficiently early, a cure is usually effected in a few days. In some very few obstinate cases, perhaps, a blister behind the ear may be needed; or it may be advisable to administer small doses of calomel; or if there be great chemosis of the conjunctiva, free incisions may be made into it. Some practitioners also recommend the application of leeches; but I believe that anything like antiphlogistic treatment will only do harm.

When the cornea is affected with ulceration, the treatment varies; it being then necessary to omit the use of the nitrate of silver, and to quickly get the eye under the influence of belladonna by painting the lids with the moistened extract, and by adding two grains of the sulphate of atropia to the corrosive sublimate collyrium,—F. 98.[*] The efficacy of this treatment depends, not upon its causing dilatation of the pupil, but upon the anodyne influence of the belladonna inducing a healing action in the cornea. At the same time, great benefit will result from the administration of calomel and quinine,—F. 44; or if the child appear very depressed, from the employment of quinine alone,—F. 63.

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[*] Mackenzie. *Opus cit.*, p. 471.

When the active symptoms have completely ceased, the conjunctiva sometimes remains red and relaxed. This condition can be usually overcome by the use of the vinum opii diluted with an equal part of water; one or two drops being employed at intervals of two or three days.

4. Conjunctivitis Aphthosa.—Aphthous or pustular ophthalmia is a frequent consequence of some cutaneous eruption, and especially of either of the exanthemata; that which follows small-pox being the most severe and dangerous. The conjunctiva becomes affected with one or more aphthous ulcerations, which form near the edge of the cornea: the symptoms are often slight, resembling those of catarrhal ophthalmia: and a cure is readily effected by an astringent eye-wash, one or two doses of purgative medicine, and a generous diet.

5. Conjunctivitis Phlyctenulosa.—Phlyctenular, or scrofulous, or strumous ophthalmia, is a disease of the conjunctiva and cornea, to which children are very liable; so much so, that it has been estimated that, of 100 cases of ophthalmia occurring in children between one and eight or nine years of age, 90 will be examples of strumous conjunctivitis. This affection is often the first manifestation of a scrofulous taint, although it may occur in patients having no tendency to scrofula; it is very tedious and troublesome; it mostly occurs between the period of weaning and the eighth or tenth year; and it may affect one or both eyes, or it may pass from one to the other.

Symptoms.—These are, for the most part, very characteristic; consisting chiefly of great intolerance of light, very slight redness, and phlyctenulæ which form at the edge of the cornea, and degenerate into small ulcerations.

The excessive intolerance of light—photophobia—is most distressing, and occasionally is the only symptom present. The child cannot open his eyes in the ordinary daylight; the attempt to do so producing a gush of hot tears, and spasmodic contraction of the orbicularis palpebrarum. Consequently, he hides himself in a dark corner of the room, or sits with his head buried in his lap until the evening, when this symptom seems to remit. With all this suffering, the redness of the conjunctiva is very slight; sometimes a few enlarged vessels being visible, though frequently none are perceived. When the disease has existed some time, the palpebral conjunctiva is often found more vascular. The phlyctenulæ, or small pimples, which form on the surface of the eyeball, are most numerous at the edge of the cornea; they sometimes become absorbed, but usually suppurate, burst, and give rise to small ulcers. Darting pains in the eye occur at night, and cause distress; which is augmented by the irritating tears producing excoriation of the cheeks.

In almost every case the general health is found affected; the digestive organs are disordered; the secretions are vitiated; and frequently other signs of scrofula—as enlargement of the lymphatic glands, eruptions about the head, swelling of the upper lip, tabes mesenterica, &c.—may be detected.

Causes.—The primary cause—as a rule—is a strumous constitution; the secondary, any circumstance which deteriorates the general health, as deficient food, impure air, want of exercise, and insufficient clothing. The disorder may be excited and kept up by the irritation of teething, or by the exanthemata, or by irritants applied to the eye.

Treatment.—This disease does not readily yield to treatment. In the first instance, the digestive organs are to be brought into a healthy condition by alteratives and mild laxatives; such as a few small doses of hydrargyrum cum cretâ, rhubarb, or calomel and scammony,—F. 4, 10, 11, 13, &c. An emetic of ipecacuanha or antimony—F. 24—is often useful in the early stage, when the skin is hot and the pulse quick. Tonics—especially quinine, in grain or half-grain doses thrice daily—then act most beneficially; their action being favoured by good nourishing food, warm clothing, warm baths, and fresh air. Cod-liver oil is very efficacious; so are the different preparations of steel; and I have found a combination of iron, iodine, and quinine—in the form of a syrup—very valuable.

As regards applications to the eye itself, it may be stated that astringents and caustics in the acute stage are very mischievous; but that sedatives, especially belladonna—F. 98—give great relief. Steaming the eye with the vapour of hot water impregnated with belladonna or opium, and warm fomentations, may be recommended. When the acute symptoms have subsided, a drop of the vinum opii placed in the eye once daily often hastens the cure; or the employment of a solution of nitrate of silver (gr. ij. to ℥j.), or of the red precipitate ointment—F. 88—has the same effect.

Lastly, the child should not be allowed to lie in bed during the day; he should be taken out into the open air as often as the weather will permit; a broad hat, or a green or black shade should be worn; and, when the practitioner wishes to examine the eye, he may judiciously save the patient much suffering by gently narcotising him with the vapour of chloroform or sulphuric æther.

6. Pterygium.—Pterygium consists of a thickened and elevated triangular portion of the conjunctiva; the base of the triangle being towards the caruncula lachrymalis, while the apex advances over the edge, or even as far as the middle of the cornea. It is probably sometimes caused by strumous, or other varieties of ophthalmia.

Treatment.—Should the application of the vinum opii, or of the solid nitrate of silver, fail to effect a cure, the pterygium must be extirpated.

SECTION III.—DISEASES OF THE SCLEROTIC AND CORNEA.

1. Sclerotitis Idiopathica.—Sclerotitis, or rheumatic ophthalmia may be defined as an inflammation of the sclerotic, or fibrous tissue of the eye excited by cold. As, however, it is a disease of the middle period of life, probably never occurring in children, it need not be described in these pages; and the same remark applies to—

2. Catarrho-Rheumatic Ophthalmia—or inflammation of both the sclerotic and conjunctiva—which is a severe disease, characterized by a combination of the symptoms of con-

junctivitis and sclerotitis. It may here be mentioned that, though ophthalmic surgeons speak of conjunctivitis, sclerotitis, corneitis, &c., it must not be supposed that the inflammation is confined to the particular texture indicated by these names; but merely that the morbid action has its origin and chief seat in these parts, while all the neighbouring tissues are more or less involved.

3. Scrofulous Corneitis.—The cornea often suffers in the affections previously noticed. Keratitis scrofulosa, or scrofulous inflammation of the cornea, is, however, a peculiar chronic disease, lasting for months, or even years; occurring chiefly in strumous subjects between the ages of eight and eighteen; and commencing in the conjunctival layer of the cornea, but gradually extending to the deeper tissues.

Symptoms.—The prominent symptoms are—slight sclerotic redness, most apparent in that part of the tissue immediately surrounding the cornea; dilatation of the pupil; haziness or trifling opacity, and more convexity than natural of the cornea; tenderness of the whole globe; and lachrymation, with photophobia. The change of figure in the cornea is due to an increased secretion of the aqueous humour—hydrophthalmia. The constitutional disturbance is slight; but general feverishness, loss of appetite, and headache, are not uncommonly complained of.

Treatment.—This must be much the same as that recommended in phlyctenular ophthalmia. I have seen the best results from the long-continued use of the iodide of potassium, sarsaparilla, and cod-liver oil; with warm anodyne fomentations locally. Quinine and iron are also very valuable remedies in this affection, particularly when there is much debility. When the inflammation has been quite arrested, the clearing of the cornea will, perhaps, be promoted by the employment of the bichloride of mercury collyrium,—F. 98 or 100.

In cases where an ulcer has formed upon the cornea, without going on to perforation, we must endeavour to heal it by the administration of tonics with good nourishing food; whilst the local application of a drop of olive oil twice daily will at least prove a soothing remedy.

SECTION IV.—DISEASES OF THE IRIS.

1. Iritis.—Inflammation of the iris is such an interesting disease to the physician and to the pathologist, that a brief account of it will hardly be deemed out of place; though it must, fortunately, be allowed that it is a very rare affection in childhood. Suspended—like a curtain with a circular aperture near its centre—between the cornea and crystalline lens, and bathed on both sides by the aqueous humour, the iris serves to regulate the quantity of light admitted to the retina. By it, the cavity containing the aqueous humour is divided into an anterior and a posterior chamber, lining which is a serous membrane, forming a shut sac analogous to the peritoneum; consequently, in iritis, the inflammation is similar to that of other serous membranes; that is to say, is of the adhesive kind—is attended with the formation of coagulable lymph. It must not be thought that in iritis the iris only is affected. This is indeed the focus of the abnormal action; but the retina, the membrane of the aqueous humour, the crystalline capsule, the sclerotic, and the conjunctiva, are involved.

Diagnosis.—Now, from whatever cause iritis may arise, its principal symptoms are the same. They are thus clearly enumerated by Dr. Mackenzie:—1. Zonular sclerotitis; fine hair-like vessels, running in radii towards the edge of the cornea. 2. Discoloration of the iris. If naturally blue, it becomes greenish; if dark coloured, reddish. This is the result of increased vascularity, or of effusion of lymph into its substance or on its posterior surface. 3. Contraction, irregularity, and immobility of the pupil. 4. Effusion of coagulable lymph into the pupil and posterior chamber, and occasionally into the anterior. 5. Adhesions of the iris, and especially of its pupillary edge, to the capsule of the lens; in some rare cases, to the cornea. 6. Tubercles, pustules, or small abscesses of the iris. 7. Opacity of the lens or its capsule. 8. Dimness of sight, and sometimes total blindness. 9. Pain in the eye of a pulsatory character, and nocturnal circum-orbital pain.

The practitioner is not to suppose that in every case all these symptoms will be met with; but rather, that a certain number of them will be found sufficient to render the diagnosis certain. The constitutional disturbance is well marked, though it is not generally very severe.

If the inflammation be not checked, it creeps on, involves the choroid coat and retina, and, spoiling the delicate texture of the latter, destroys the sight for ever.

Causes.—The causes of this affection are:—injuries and wounds, producing traumatic iritis; exposure to cold and wet, giving rise to rheumatic or idiopathic iritis; syphilis and gonorrhœa, causing syphilitic iritis; and certain conditions of the constitution, especially the scrofulous, inducing strumous iritis. Iritis arising as one of the secondary effects of syphilis, though rare, is perhaps the most common form of this disease in the young; it may be accompanied with the other effects of constitutional syphilis, such as copper-coloured eruptions, wasting, tenderness of the limbs, and aphthous ulcerations about the mouth and fauces. Without laying too much stress upon the local peculiarities of syphilitic iritis, it may be mentioned that, at first, the redness is much less severe than in the rheumatic form; that the iris often assumes a rusty colour, especially near its pupillary edge; and that the pupil is occasionally apt to be displaced, to be drawn upwards towards the root of the nose. Lastly, Dr. Taylor has related the history of an interesting example of iritis in an infant, which he believed to be due to the irritation of teething.*

Treatment.—Mercury, blood-letting, and belladonna are the three supports on which we are taught to rely; and so strongly have these remedies been recommended, that it will be difficult to persuade many practitioners of their inutility. But that the first two agents may be often advantageously dispensed with is, I think, proved by the sixty-four cases of Dr. W. H. Williams; all of which were cured by sustaining the general health, relieving pain with narcotics, and keeping the pupil dilated by belladonna.†

Hence, I would advise that in the treatment of inflammation of the iris the patient be kept very quiet in a darkened room; that hot fomentations, with poppy capsules, be applied; that the bowels be kept regular by mercurial purgatives, or enemata; that small doses of opium be given to relieve the pain; and that the diet be plain but nourishing, and free from stimulants. If there be depression, ammonia and bark, or quinine, may be advantageously given. In infantile syphilitic iritis I would also recommend the iodide of potassium. Moreover, during the treatment, from the commencement to the termination, it is generally advised that the pupil be kept dilated, in order to prevent the iris from forming adhesions with the capsule of the crystalline lens. This may be done by belladonna, or by a solution of atropine —F. 99. No astringent or other collyria should be employed.

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* *Medical Times and Gazette*, 6 March, 1852.

† See Chapter III., Section I.

Oil of turpentine has long been recommended in iritis where the use of mercury is contra-indicated. Mr. Guthrie speaks favourably of its effects in some few instances in which he employed it in adults. Should the practitioner be unwilling to trust too much to Nature, he can try its effects.

2. Congenital Imperfections of the Iris.—A congenital malformation which sometimes occurs is an incomplete formation of the iris, or even a total absence—occasionally spoken of as Irideremia—of this membrane. Children thus unfortunately formed are painfully impressed by the too great influx of light into the eye; and consequently they depress their eyebrows, and keep the eyelids half closed.

When the child becomes old enough, the suffering may be partly ameliorated by wearing a dark plate, with a small aperture in it, in front of the eye; thus forming a rude kind of artificial iris.

In Albinos there is a deficiency of black pigment in the choroid and uvea; this deficiency imparting a pink hue to the pupil and iris, and causing the affected person to suffer from intolerance of light.

SECTION V.—CONGENITAL CATARACT.

The infant may be born with cataract—opacity of the crystalline lens or its capsule. Occasionally, a few days after birth, an attack of ophthalmia is experienced; on the subsidence of which, cataract is discovered. In such cases it cannot be positively determined, from the want of previous examination, whether the opacity existed at birth, or came on during the inflammation. Both eyes are usually affected.

Congenital cataract appears to be generally owing to an original imperfect formation of the crystalline lens: sometimes several children in the same family are born with it. When the opacity involves the whole lens, the eye should be operated on before teething commences. The reasons for the early performance of the operation are thus stated by Mr. Wharton Jones:—"As the infant cannot see, its eyes are not fixed on objects, but roll about in a heedless manner. This being allowed to go on, the infant loses command over the eyes, or, rather, does not acquire command over them; and even if sight be afterwards restored by an operation, the power of directing the eyes properly and steadily towards objects may never be fully gained. It is also to be observed that good sight is more likely to be restored by an early operation. Moreover, the important opportunity of education of and by the sight is secured."*

The operation usually performed at this period of life is that known as *Division*. The effect of this proceeding is to divide the cataract into fragments; which, becoming dissolved in the aqueous humour, disappear by absorption.

SECTION VI.—AMAUROSIS.

General Description.—The term amaurosis—from ἀμαυρόω, to obscure or darken—is used to express partial or complete loss of vision arising from defective sensibility of the optic nerve. The transparent tissues and humours of the eye may all be healthy, but the nervous matter which should receive and convey impressions, and render them perceptible to the mind, is affected. As Dr. Mackenzie says, if the retina be incapable of receiving with correctness impressions of external objects through the medium of light, if the optic nerve be unable to convey to the sensorium the impressions made upon the retina, or if the brain be incapable of receiving the impressions conveyed by the optic nerve, the individual must be affected with an obscurity in vision, or suffer a total deprivation of sight, according to the degree of inability in these several parts to execute their functions. Even when he goes no further than this, the pathologist must see the necessity of distinguishing different cases of amaurosis according as the retina, the optic nerve, or the brain, is the part first and principally affected. Now the affections of either of these three parts which may cause amaurosis are *pressure* and *structural change*, such as inflammation, suppuration, induration, ramollissement, hypertrophy, atrophy, &c. "In children," remarks Mr. Dixon, "the occurrence of *Tubercle* in the brain would suggest itself as a probable cause of blindness coming on without apparent disease in the eyes themselves. The occurrence of fits or paralysis would strengthen the suspicion; although blindness may, for a long time, be the only manifestation of such cerebral affection. During the progress of *Hydrocephalus*, loss of sight invariably takes place; and in the later stages of the disease, the pupils become dilated to their fullest extent, and quite immovable."*

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* *Defects of Sight, &c.*, p. 121. London, 1856.

It must also be remembered that slight structural changes are probably sometimes produced by remote causes. Thus, amaurosis may arise from the presence of worms in the intestines; the intestinal irritation being sufficient, in an extreme case, to excite a morbid condition of some part of the optic apparatus. So, again, the irritation of teething may produce temporary amaurosis in the same manner.

Symptoms.—In examining an amaurotic patient, the first points that attract attention are his gait and expression of countenance. He walks with an air of uncertainty; and his eyes, instead of being directed towards surrounding objects, have an unmeaning look—appear to be staring at nothing. In incomplete amaurosis, the movements of the iris are sluggish and the pupil is dilated; in total blindness, the pupil is greatly dilated and the iris immovable. When both eyes are affected, they are often unnaturally prominent and of an unhealthy colour; the sclerotica being frequently of a yellowish hue, and covered with varicose vessels.

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* *The Practical Study of Diseases of the Eye*, p. 186. London, 1855.

In the commencement, the failure of sight is only experienced occasionally, as after long-continued exertion of the eyes, reading by candlelight, &c. Sometimes it begins with indistinct vision, or *amblyopia;* or objects appear double, *diplopia;* or only one-half of an object may be seen, *hemiopia.* At the same time there is frequently headache, and ocular spectra become visible; the patient complaining of black specks or flies floating in the air—*muscæ volitantes*—or of flashes and scintillations of light—*photopsia.*

Treatment.—It is difficult to lay down rules for the treatment of this disease, for since the causes upon which it depends are various and opposite, so, consequently, are the means of cure numerous and unsatisfactory. In all instances, however, attention must first be directed to the general health. Each case is then to be studied in all its bearings, especially with reference to the cause of the affection. When it manifestly results from inflammation, mercury, or iodide of potassium will be necessary; when from vascular exhaustion or nervous debility, the preparations of iron, cinchona, good diet, sea air, and tepid or cold bathing, are indicated; when from the presence of intestinal worms, anthelmintics are to be resorted to; and when, from the irritation of teething, sedatives, lancing the gums, and gentle stimulants, will often effect a cure.

Children sometimes feign amaurosis to escape from school, &c. The assumed disease may be detected by the history, by not showing any suspicion of the imposition, and by practising a little artifice when the patient is off his guard—such as suddenly directing his attention to something curious in the room.

SECTION VII.—ENCEPHALOID FUNGUS OF THE EYEBALL.

Encephaloid fungus of the eyeball—soft cancer—or fungus hæmatodes, occurs more frequently in early childhood than at any other period of life. It has its origin generally in the retina; though it has often been found to arise in the optic nerve before its entrance into the eye, as well as in every tissue of the eyeball, except the lens and cornea.

Symptoms.—In encephaloid originating in the retina, three stages are usually recognised. In the *first*, the eyeball is of its natural size and general appearance, except that the pupil is more or less dilated, and through it a brilliant reflection from the bottom of the eye can be seen. In the *second*, the diseased growth, though still confined within the tunics, has advanced towards the anterior part of the eyeball, which has become bloodshot, and more or less enlarged and misshapen from distension. In the *third stage* the tunics have given way, and the tumour protrudes in the form of a fungus.

Diagnosis.—In the early stage the diagnosis between encephaloid fungus of the eyeball and scrofulous deposit within the globe is very difficult; and in the majority of instances it is almost impossible to give a correct opinion upon the nature of the case until the globe bursts and the contents escape. We then find—if the affection be scrofulous—that a chronic discharge takes place from the opening, until the tissues gradually collapse and form a small shrunken mass. But in encephaloid disease, a vascular fungoid growth soon sprouts out, which grows rapidly, and speedily assumes all the characters of an ulcerated cancer.

Treatment.—Very mild alterative courses of mercury, especially of the bichloride; bark and cod-liver oil; sedatives, with anodyne applications locally; and careful regulation of the bowels, regimen, and diet, constitute the only treatment which experience shows is admissible. Extirpation has been so generally unsuccessful that, according to Mr. Wharton Jones, little is to be hoped from such an operation.*

SECTION VIII.—STRABISMUS.

Strabismus, or squint, is a deformity, consisting in a maldirection of one or both eyes, or a want of power to move them together harmoniously, so that their axes shall always be directed at the same time to the same point.† The chief forms of squint are the convergent or inward, and the divergent or outward; single convergent strabismus being by far the most common.

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* *Ophthalmic Medicine and Surgery*, p. 216. 2nd ed. London, 1855.

† For this definition, and for many of the subsequent remarks, I am indebted to the excellent course of lectures on the *Pathology and Treatment of Strabismus*, published by Mr. Holthouse.

Symptoms.—If an individual affected with *strabismus convergens* be directed to look at an object placed at some little distance in front of him, the squinting eye will be turned inwards towards the nose, while only the sound eye is directed to the object; and however the position of the object may be varied, the effect will be the same—viz., that the sound eye gazes at it, while the affected eye disregards it. But if the patient be desired to close the sound eye, he can then direct the other to any object he wishes, though perhaps to a less extent outwards than in other directions. Moreover, if both eyes are closed, and the lid of each then gently raised, the squinting eye will be found turned to the inner canthus.

In *strabismus divergens* there is the same want of harmony in the movements of the two eyes, so that in looking at an object placed directly before them they never converge to the same point; the sound eye alone being directed to it, while the squinting one is more or less everted.

It is not very uncommon for both convergent or divergent strabismus to be combined with a slight upward or downward squint; while much more rarely the cornea is neither inverted nor everted, but directed upwards—*strabismus sursumvergens*, or downwards—*s. deorsumvergens*. *Double convergent strabismus*, in which both eyes are habitually more or less turned in at the same time, is also sometimes met with; as well as *alternating convergent strabismus*, in which, on covering the habitually well-directed eye, it squints, while the previously affected eye becomes straight.

The vision of a squinting eye is generally imperfect: an early symptom, of which the patient does not long continue sensible, is double vision: the distorted eye is either somewhat more or less prominent than its fellow: and the pupil of the affected eye is frequently less obedient to the stimulus of light, and hence more dilated than the other.

Causes.—Strabismus commonly arises in early life—usually, perhaps, between the fifth and ninth years of age. It is sometimes merely temporary, depending on some functional disorder; more commonly it becomes permanent. Occasionally it is the first sign of acute hydrocephalus.

The chief remote causes to which it is attributable are—

defective vision, diseases of the brain, convulsions during infancy, difficult dentition, the exanthemata, hooping-cough, epilepsy, intestinal worms, injuries to the head, fright, imitation, ophthalmia, and a habit of misdirecting the eyes; while in many instances no reason can be assigned for its occurrence.

The proximate cause is some affection of the orbital muscles; by which one has become stronger, or weaker, or shorter than the others, owing, probably, to perverted nervous action.

Treatment.—In every recent case of strabismus, the practitioner should first endeavour to ascertain the cause, in order to lessen or remove it; and when in children this is not evident, no harm can arise from paying attention to the general health, regulating the diet, and insuring proper action of the bowels.

The squint persisting for two or three months, we may be sure that it will neither disappear spontaneously nor from constitutional treatment; and the question arises—are we to recommend an operation? Mr. Haynes Walton places the argument so fairly before his readers that I cannot do better than quote his words:—"An operation is contra-indicated when certain causes are present, such, for instance, as inflammation of the eyeball or its appendages; when there is an opacity of the cornea, so that the obliquity is a provision for enabling the patient to see—the other eye being lost; or when caused by tumours, cicatrices from wounds, contractions after abscess, or indeed any accidental mechanical means that pushes or draws the eye from its axis. After it has been ascertained that the case is a proper one for operation, I cannot see that there is any advantage in delay, for preparatory treatment is not called for. When I have advised an immediate operation, I have frequently been asked if there is not a chance of a child outgrowing the deformity. There is certainly a feeling both in and out of the profession that an operation should be delayed till after puberty; but there is much to be said against, and nothing that I am aware of for the postponement, for increase in age does not remove a squint, and imperfection of vision, when a result of the obliquity, may be improved or actually removed by an early operation." *

The operation consists in effectually dividing the tendinous expansion of the affected muscle—usually the internal rectus; the little patient being narcotised by the vapour of sulphuric æther or chloroform. There is seldom any bleeding; the wound in the conjunctiva heals kindly; and no special after-treatment is necessary. Should it happen, as it sometimes will, that the sound eye becomes somewhat inverted after the deformity of its fellow has been rectified by operation, it will be necessary to treat it in the same way as if it had been originally the faulty eye.

CHAPTER X.

DISEASES OF THE EAR.

SECTION I.—OTALGIA.

Otalgia, or earache, may be *symptomatic* of inflammation of the ear, or of the presence of foreign bodies, or of tonsillitis, or of disorder of the *prima via*, or of rheumatism of the head, &c.; or it may be *idiopathic*, that is to say, true neuralgia of the ear. In the latter case, the pain is most severe on its invasion; and, unlike the pain in otitis, does not increase in severity, is unattended by fever, and often disappears suddenly. When the pain is very severe, it frequently shoots through the nervous filaments distributed over the same side of the face and head, causing much suffering and restlessness. When the affection is symptomatic, the *treatment* must be directed to the primary disease; when idiopathic, mild purgatives, a blister behind the affected ear, or the application of chloroform or the tincture of aconite, will be useful. Any carious teeth must be extracted or stopped.

Children not unfrequently poke peas, beads, grains of corn, pieces of slate-pencil, and other foreign bodies into the external meatus. To remove such, the ear should be carefully syringed; but this treatment failing, the extraneous substance should be laid hold of by means of a small pair of forceps and gently extracted, or it may be removed by cautiously passing a curette or scoop over it. In all cases, before attempting extraction, the surgeon should convince himself by careful examination that a foreign body is really present.—An accumulation of hard, dark-brown wax in the auditory passage sometimes acts as an irritant, causing uneasiness, buzzing, and deafness. It may be dislodged by careful syringing with warm water; or if firmly adherent may be lifted away with the curette, all rude force being avoided.

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* *Operative Ophthalmic Surgery*, p. 278. London, 1853.

SECTION II.—OTITIS.

Otitis, or inflammation of the ear, may affect the external and internal ear at the same time, or it may be confined to either.

External Otitis, or inflammation of the membrane lining the meatus auditorius externus, is at first characterized by dryness, itching, and heat of the part, gradually increasing to a dull aching, and eventually to an acute pain, generally increased at night, causing great agony, sleeplessness, fever, and even delirium. The lining of the meatus is swollen, dry, and pinkish; in a short time a muco-purulent or purulent discharge takes place, and relief is experienced. Attendant upon these symptoms and appearances, there is a sensation of soreness of the head upon the affected side; while sneezing, moving the jaw, &c., increases the suffering.*

Internal Otitis, or inflammation of the lining membrane of the cavity of the tympanum, is a most severe disease; being generally combined with inflammation of the membrana tympani—the *myringitis* of Wilde. Though frequently a disease of youth, it may occur at any time of life: cold is a frequent cause of it, especially in debilitated or strumous individuals. It commences with violent headache, tinnitus aurium, and impaired hearing; followed by intense, acute, gradually increasing pain in the ear, and loud or beating noises; until after a short time a sense of bursting or distension in the ear is experienced. The eyes become injected, the countenance anxious, the skin hot, pulse frequent, and the functions of the kidneys and bowels disordered. Delirium is often present; or, in children, convulsions. Many of the violent fits of screaming with which children awake out of sleep, are caused by otitis; a sudden accession of excruciating pain in the middle of the night being a frequent symptom of this affection, even when it exists in a subacute or chronic stage. Facial paralysis, caused by the inflammation extending to the bony canal in which the portio dura passes round the tympanum, may occur. The disease terminates in one of three ways: either by resolution, the symptoms gradually subsiding, and hearing being restored; or by suppuration, the pent-up pus bursting through the membrana tympani, and so discharging itself; or by the inflammatory process spreading either through the mastoid cells internally, and so producing necrosis, exfoliation, and cerebral disease,—or extending externally by the bony meatus to the periosteum covering the mastoid process.

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* *Practical Observations on Aural Surgery, &c.* By W. R. Wilde, p. 194. London, 1853.

Peculiar forms of otitis have been well described by Mr. Harvey, such as the rheumatic and gouty, which, however, need only be here mentioned: as well as exanthematous otitis, which, according to Mr. Wilde, frequently follows scarlatina and measles, and if neglected gives rise to unmanageable otorrhœa, destruction of the ossicula, incurable deafness, and even loss of life.*

Treatment.—The treatment of otitis must be prompt and decided. In many cases, where the fever runs high, and the suffering is acute, antimony in nauseating doses will be called for; alterative doses of mercury must also be administered; active purgatives are necessary; and the patient must be restricted to low diet. Hot fomentations sedulously applied, poultices, and holding the ear over the steam of hot water, usually give great relief. On the subsidence of the acute symptoms, counter-irritation behind the ear may be useful.

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* Dr. Theophilus Thompson has recorded an interesting case of gangrenous abscess of the brain induced by exanthematous otitis. The patient had been affected with deafness and discharge from the right ear, the result of scarlatina, for more than twenty years. All at once, violent sickness came on, followed in a few hours by coma, and death. The case is remarkable for the long continuance of the disease of the ear before it extended to the brain, for the insidious way in which serious disease of this organ involved the brain, and for the suddenness of the fatal issue after the first occurrence of alarming symptoms.—*Transactions of the Pathological Society*, vol. vii., p. 16. London, 1856.

Should the pain continue, both Wilde and Harvey recommend that a free incision be made over the mastoid process, down to the bone; this proceeding being especially needed, if it can be determined that pus has formed under the periosteum, or if it be thought that the inflammation has extended to the osseous tissue. At the same time the system may be gently got under the influence of mercury. When the membrana tympani has been ruptured, the inconvenience which arises must be subsequently obviated by the application of a thin layer of moist cotton wool as recommended by Mr. Yearsley, or by the use of an artificial membrane as suggested by Mr. Toynbee.

SECTION III.—OTORRHŒA.

OTORRHŒA—a purulent or muco-purulent discharge from the ear—is, properly speaking, only a symptom of certain diseases of this organ; as of inflammation, polypùs, granulations on the surface of the membrana tympani, &c. It occurs very frequently, however, without any appreciable cause, in young children—especially in strumous subjects—about the time of dentition, or on the subsidence of any of the exanthemata, or on the sudden cessation of purulent ophthalmia. It is commonly neglected, or treated with purgatives and any "drops" that the fancy of the nurse suggests: no proper examination is made: and a loathsome, obstinate discharge is established, Thus, that which might have been cured in a short period by appropriate treatment, is allowed to become a chronic affection; in which case it may continue for years, destroying in the course of time the membrana tympani, the ossicula auditûs, and producing caries of the bony walls of the meatus and tympanum. The disease may even extend to the cells of the mastoid process of the temporal bone; or in the opposite direction along the petrous portion of the same bone, until the brain and its membranes becoming involved in the unhealthy action, rigors, fever, and masked cerebral symptoms show themselves, and the case ultimately terminates in convulsions, coma, and death.

Treatment.—The first step must be to syringe, and then to carefully examine the meatus auditorius externus by means of an ear speculum. A simple conical silver tube, well polished internally so as to transmit the light, is the simplest and best form of instrument. If the discharge be not severe, and no cause, as polypus, &c., be found to account for it, a cure may often be effected by daily dropping into the ear a solution of alum, zinc, or tannin, of the same strength as the various collyria (gr. iv.—x. to ℥j.). When these means fail, the surface of the canal should be painted with a solution of nitrate of silver (gr. vj. ad ℥j.), with a camel's hair pencil: this must be repeated every second day, the ear being frequently syringed in the interval with tepid water by means of an elastic bottle, or common syringe. The application of glycerine, as recommended by Mr. Thomas Wakley, may also be beneficial after the use of the astringents. Where the patient's general health is bad, tonics and change of air will be necessary; in scrofulous cases iodine, cod-liver oil, &c., should be tried; and in all instances a generous diet is invaluable.

No mischief whatever can ensue from curing either recent or long continued otorrhœa, as was at one time—and is still by the vulgar—feared. The evils which result from these discharges are due to their being neglected; for, so long as they are present, we never can tell how, when, or where they will terminate, or what serious disorganization they may lead to.

SECTION IV.—THE DEAF AND DUMB.

Although the subject of deaf-dumbness is not usually treated of in works like the present, yet I trust the importance and interest which naturally is attached to the most desperate of human calamities may plead as sufficient excuse for introducing a few lines on the matter. It can hardly be necessary to observe that the incapacity of speech which exists in such as are designated deaf and dumb, results entirely from the want of the sense of hearing, and not from any physical imperfection in the organs of speech. All who are deaf from birth must be dumb; for how can they use language, the sound of which they have never had the perception of, and which they consequently cannot attempt to imitate?

By the Census of 1851 in Great Britain, 12,553 persons (6,884 males and 5,669 females) were returned as deaf and dumb, or 1 in every 1,670 of the inhabitants. According to the most recent returns, the average proportion of the deaf and dumb to the population of Europe generally, is found to be 1 in every 1,593 persons. Deaf-mutism is also found to be more common in agricultural and pastoral districts than in towns.

Causes.—In some cases there has been no appreciable organic defect; in others the cause of the deafness has been either some organic change in the auditory nerves, or some lesion at their origin, or an alteration at the base of the brain or about the medulla oblongata, or effusion into the fourth ventricle, or imperfect development of the ear itself, or disease of the ear occurring during early infancy. Some authorities also assert that many of the cases of deaf-dumbness originate in convulsions occurring during the first dentition.

Education.—Children who are born deaf differ but little from other children during early childhood; and it is not usually until a rather advanced period that the parents will allow themselves to be convinced that there is a positive defect of hearing in one who is, probably, more than commonly engaging and affectionate, and who—from the expressive play of his features and the readiness with which he apprehends the slightest look or gesture—has, perhaps, been regarded as more than ordinarily intelligent.

Experience having shown the almost complete impossibility of curing the deafness, it becomes a matter of the utmost importance early to commence the education of the other senses; so that the hapless being who is debarred from the chief avenue to knowledge at the most critical period of his intellectual growth may, nevertheless, not remain uneducated. The system of instruction for deaf mutes consists of:*—1. *Pantomime,* which may be divided into the employment of such natural, imitative, or descriptive signs or expressions of thought by gesture and pantomime as all mute persons acquire; or those arbitrary and conventional signs used by teachers and others in the habit of communicating with the deaf and dumb. The former are common to all mutes, and vary but little; the latter are generally founded upon some special plan, the method of one teacher differing from that of another—all of which shows the necessity of adopting some universal system by which the mutes of countries speaking different languages may communicate their ideas. The use of pictures, models, and similar illustrations may be classed under this head. 2. *Dactology*, or finger-writing by either the double or single-hand alphabet; the former being that chiefly taught in this country; the latter that used on the Continent, in America, &c. 3. *Writing and Reading*. 4. *Lip-reading*, by which a mute understands what is said by merely watching the motions of the lips of a speaker; those, however, who acquire this faculty being generally such as heard and spoke originally, but who, by accident or disease, became totally deaf and subsequently mute. 5. *Articulation*, or the pronunciation of words and sentences. To what extent the true congenital deaf person can ever be taught to speak is still undetermined—only a few of the most intelligent and anxious are at all susceptible of such teaching, and even in these the effort at vocalization is, from want of hearing, harsh and inharmonious, and seldom turned to much account in their intercourse in life. In most of the schools of this country, the system has been abandoned; the teachers conceiving that the time spent in acquiring this mechanical form of speech may be more usefully employed in other descriptions of education.

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* The paragraphs which follow are taken almost verbatim from the Appendix to Mr. Wilde's treatise.

As regards the industrial education of deaf mutes it is only necessary to say that they are probably as capable of acquiring a practical knowledge of the mechanical and industrial arts, as hearing and speaking persons in their own rank of life.

CHAPTER XI.

DISEASES OF THE SKIN.

SECTION I.—CLASSIFICATION, &c.

It is an opinion very generally entertained by medical practitioners, that the subject of cutaneous pathology ought to be viewed as a distinct branch of medicine; since it is not only thought that the diagnosis of cutaneous diseases is extremely difficult, but also that the treatment of these affections requires special study. I believe that such ideas are very erroneous and mischievous; the various phenomena presented by each class of these disorders being generally strikingly characteristic and always appreciable by the eye, while their treatment is by no means difficult in the majority of cases, and often remarkably simple. Moreover, it must be remembered that the greater number of cutaneous affections are very common, very irritating, and very unsightly; and that—speaking generally—they are merely local manifestations of a constitutional disorder. How then can he be a sound or successful practitioner of medicine who is not fully acquainted with them in all their bearings?

In dealing with the symptoms, diagnosis, and treatment of these diseases, it is necessary to adopt some classification: for although all such classifications are—like the Linnæan classification of the vegetable kingdom—entirely artificial, yet they cannot be dispensed with. The systematic arrangement which it is proposed to follow in these pages, is that of Willan, considerably modified; and as infants and children are liable to the same skin diseases as adults, this chapter must contain an account of them all, at the same time that the description is qualified so as to apply specially to these affections as they occur in early life.

Order 1. *Exanthematous or Erythematous Eruptions.*—The diseases of this group are characterized by the appearance of variously formed superficial red patches, varying in intensity and size, disappearing transiently under pressure, and terminating in resolution or desquamation. They are frequently complicated with gastro-intestinal irritation or inflammation, and with cerebral or pulmonary diseases. This order includes Erythema, Erysipelas, Roseola, and Urticaria.

ORDER 2. *Hæmorrhagic Eruptions.*—In this order the chief feature is the presence of crimson spots of variable size, caused by the rupture of capillary vessels: hence, as the blood is extravasated, the redness is unaffected by pressure. When the hæmorrhagic spots are very small they are termed *petechiæ;* when large, *vibices* or *ecchymoses.* Two diseases belong to this class, viz., Purpura and Scurvy.

ORDER 3. *Vesicular Eruptions.*—A vesicle is a slight elevation of the epidermis, containing a serous fluid—generally transparent, but occasionally opaque or sero-purulent. The fluid may be absorbed; or it may become effused upon the surface, causing excoriation and small thin scabs or incrustations. Vesicular eruptions are occasionally preceded by fever, but often appear imperceptibly: they give rise to a peculiar appearance, as if drops of water had been scattered over the surface of the skin. In this order are placed Sudamina, Herpes, and Eczema.

ORDER 4. *Bullous Eruptions.*—As a general rule, bullæ differ from vesiculæ merely in being larger, and hence it is almost unnecessary to separate them into two orders: they are superficial tumours, varying in size from a quarter of an inch to two or three inches, and are produced by effusions of serum beneath the epidermis. Pemphigus and Rupia are the two eruptions which come under this class according to Willan; but Dr. Burgess has judiciously added Button Scurvy.

ORDER 5. *Pustular Eruptions.*—The pustular affections of the skin are characterized by the formation, between the cuticle and cutis vera, of small tumours called pustules, containing purulent fluid. Three kinds of pustules are sometimes spoken of by authors, viz., *psydraciæ*, or such as are small, irregularly circumscribed, and but slightly elevated above the skin; *phlyzaciæ*, or those which are of some size, elevated, have inflamed bases, and end in small brown scabs; and *achores*, or such as are small, have comparatively large inflamed bases, and form thick large scabs which somewhat resemble incrustations of honey. The genera of this order are Ecthyma, Impetigo, and Equinia.

Order 6. *Parasitic Eruptions.*—The order Parasitici must be divided into two groups, according as the parasite belongs to the vegetable or animal kingdom. The cutaneous diseases depending on a parasitic plant are, Tinea Tonsurans, Tinea Favosa, Tinea Decalvans, Tinea Sycosis, Plica Polonica, and Chloasma; while the disease produced by a parasitic insect is Scabies. All are contagious.

Order 7. *Papular Eruptions.*—A papula or pimple is a small, solid, acuminated elevation of the cuticle, resembling an enlarged papilla of the skin; generally terminating in resolution, or in slight desquamation, and sometimes in ulceration of its summit. Papular eruptions are usually preceded by itching; are rarely accompanied by fever; slowly developed; not contagious; appear on any part of the body; and vary in their duration from a week to several months. Lichen and Prurigo are the diseases of this class.

Order 8. *Squamous Eruptions.*—The term squamæ is applied to the scales of degenerated, thickened, opaque, dry epidermis which cover minute papular elevations of the skin: they are readily detached, and are reproduced by successive desquamations for a length of time. The scales or scurf are the result of a morbid secretion of the epidermis: their formation gives rise to merely slight constitutional disturbance, and to local heat and troublesome itching. None of the squamous diseases are contagious, but they are very chronic in their duration. Lepra, Psoriasis, Pityriasis, and Icthyosis are the diseases included in this order.

Order 9. *Tubercular Eruptions.*—This order is divided into the following genera: — Elephantiasis, Molluscum, Acne, Lupus, Frambœsia, and Keloid. These affections are characterized by the formation of small hard tumours or tubercles, more or less prominent, circumscribed in form, and persistent: the tumours may become ulcerated at the summit, or they may terminate in suppuration. Tubercular diseases are slowly developed, are very chronic, are more severe in tropical than temperate climates, and their symptoms are so characteristic, that their diagnosis is easy.

ORDER 10. *Maculæ.*—This order of cutaneous diseases is characterized by certain changes of colour in parts of the skin—giving rise to spots of various appearance and size—or in the whole of the cutaneous envelope. The maculæ are seated in the rete mucosum, and depend on some alteration of its colouring matter: they are generally incurable, and unattended by any derangement of health. They may be divided into two classes, those attended by *change* of colour—Nigrities, Lentigo, Ephelis; and those marked by *absence* of colour—Albinismus and Vitiligo.

SECTION II.—ORDER 1. EXANTHEMATA.

1. ERYTHEMA is a non-contagious, superficial inflammation of the skin; characterized by slight red patches of variable form and extent, and most frequently seen on the face, chest, and extremities. Its duration varies from a week to a fortnight: it is seldom preceded or accompanied by febrile symptoms: it causes but little local heat, and no pain: it terminates by slight exfoliation of the epidermis: and the prognosis is always favourable.

Species.—There are several varieties of erythema, as—*E. Fugax*, in which the red patches are evanescent and fleeting, subsiding at one part to break forth on another, and producing heat and dryness of the surface. It is symptomatic of some visceral derangement. *E. Circinatum* appears in the form of small, round, and slightly elevated patches of redness, which increase at their circumference, while the central portions assume their natural colour; thus a series of red rings are formed. *E. Intertrigo* occupies the folds of the skin, and is induced by the friction or chafing of one surface upon another. It is often met with in the axillæ, groins, and between the buttocks of infants who are not kept clean and dry. And, lastly, we have *E. Nodosum*, in which the eruption is confined to the fore part of the leg; taking the form of one or more large oval patches, running parallel to the tibia, and rising into painful protuberances, much resembling nodes. It occurs commonly in young women when badly nourished or overworked.

Treatment.—This is very simple. A few doses of some mild saline aperient; warm baths; attention to the digestive organs; light diet; and tonics, especially quinine, or the compound tincture of bark, or the mineral acids, are sufficient for the cure of all forms of this affection.

2. Erysipelas—popularly called in Scotland the *rose*, in this country *St. Anthony's fire*—is a diffused inflammatory affection of the skin, and very commonly of the areolar tissue, characterized by the affected part becoming of a deep-red colour, hot, painful, and swollen. No portion of the surface is exempt from attacks of it; but the integuments of the face and head are most commonly the seats of *idiopathic* erysipelas—that which arises from internal causes; while *traumatic* erysipelas —that which follows a wound—may occur on any part.

Symptoms.—Idiopathic erysipelas resembles the eruptive fevers, inasmuch as it is preceded by fever and general constitutional disturbance. It often sets in with chilliness, followed by distinct rigors; sore throat is an early and frequent accompaniment of it; there is great mental depression; disturbance of the cerebral functions; and nausea, vomiting, and diarrhœa may also be present. Then, on the second or third morning from the rigor, redness and swelling appear on some part of the skin, frequently on one side of the nose, spreading to the rest of the face, and often extending over the scalp, neck, and shoulders. The lips swell, the cheeks enlarge, the eyes become closed by their puffy lids, and all traces of the natural features are completely lost; while there is frequently great fever and debility, with very weak pulse, brown and dry tongue, and low muttering delirium. After three or four days the redness fades, the swelling subsides, and the cuticle desquamates. In most cases the inflammation is merely superficial; occasionally it affects the subcutaneous areolar tissue—*phlegmonous erysipelas*—and is then apt to be followed by suppuration and sloughing.

Terminations.—Erysipelas may prove fatal by the extension of the inflammation to the brain or its membranes, giving rise to effusion and coma. The same result may occur from the mucous membrane of the glottis becoming affected, so that the chink gets closed, and the patient dies unexpectedly from suffocation. In other cases death is owing to failure of the vital powers.

Causes.—Erysipelas may arise from contagion. When it prevails epidemically, as it sometimes does, insufficient food, foul air, and trifling injuries favour its occurrence.

Treatment.—This must be conducted on the principle that we cannot cut short the disorder, but only lead it to a safe termination. At the commencement an active purgative, such as a dose of the neutral salts, will be beneficial; and when the tongue is much coated and the breath foul, an emetic does good. In the country, when the patients are young and vigorous, bleeding is commonly considered necessary; in London such practice would invariably be bad. In the cases which have fallen under my own notice, there has always been marked evidence of debility, and I have consequently followed the practice of those physicians who adopt a tonic mode of treatment as the great rule in idiopathic erysipelas. The late Dr. Robert Williams, of St. Thomas's Hospital, gave all his adult erysipelatous patients milk diet, sago, very gentle purgatives, and from four to six ounces of port wine daily, from the very first appearance of the disease, irrespective of the symptoms or the part affected; and he says, in his admirable work on Morbid Poisons, "I have pursued this system for several years, and I hardly remember a case in which it has not been successful." The sesquicarbonate of ammonia, in doses of one to five grains, according to the age, will often prove an excellent substitute for wine; or it may be administered alternately with wine every three or four hours.

Of all the local applications which have been recommended, that which gives the most relief is the fomentation by flannels wrung out of a hot decoction of poppy-heads, assiduously applied. Linseed-meal poultices are sometimes useful; flour freely dusted over the inflamed part has often a soothing, cooling effect in mild cases, but as it imbibes the cutaneous transpiration it is apt to form a crust which is removed with pain and difficulty; and sedative lotions, or water dressing—the temperature being regulated by the feelings of the patient—are frequently of much service.

In the phlegmonous form of the disease, when suppuration has taken place, and pus has become infiltrated through the areolar tissue, free incisions must be made to give it exit.

Infantile erysipelas most frequently occurs about the region of the umbilicus, from whence it may extend over the entire surface of the abdomen. It may be due to some mismanagement of the remains of the funis. The strength must be supported: if the mother's milk be deficient in quantity or quality, a vigorous wet-nurse should be obtained. Cordials, as white-wine whey, wine and water, &c., should also be given.

3. ROSEOLA is a mild, non-contagious inflammation of the skin, characterized by rose-coloured spots or transient patches of redness, of small size and irregular form, distributed over more or less of the surface of the body; its duration varies from twenty-four hours to six or seven days. The eruption, at first brightly red, gradually subsides into a deep-roseate hue, and slowly disappears. It is accompanied by slight fever.

Young children frequently suffer, especially in hot weather, from a peculiar form of roseola—*R. Infantilis*—which, from its resemblance to rubeola, is commonly known as *false measles.* It may be distinguished by the constitutional disturbance being very slight; by the eruption being confined to one limb, or to one portion of the trunk; and by the absence of that crescentic arrangement of the spots so generally present in measles.

But little *treatment* is usually necessary. Simple diet, diluents, and a few warm baths, are often all that is required; perhaps mild alteratives, laxatives, and tonics may be needed in some few cases.

4. URTICARIA.—Urticaria or nettle-rash, is a transient and non-contagious exanthematous eruption; characterized by long prominent patches or wheals, either red or white, of irregular shape, and of uncertain duration. The spots or wheals closely resemble those produced by handling nettles. It is accompanied by intense heat; a burning and tingling in the affected spots, with great itching; and it is associated with more or less irritation of the gastro-pulmonary mucous membrane, and fever.

There are two varieties: one in which it is acute, running a short, rapid course; another in which it is chronic, very obstinate, and either persistent or intermittent. Both forms attack individuals of all ages and constitutions. The chronic intermittent variety is the *urticaria evanida* of Willan; it sometimes lasts for months, or even years. Urticaria may attack young infants, and prove very troublesome. The child, perhaps, is put to bed apparently quite well, but in the middle of the night it awakes and screams: the cause of which restlessness is at once explained when the large wheals are found on the lower part of the body and legs.

Urticaria is caused by the irritation of dentition; by pulmonary irritation; by exposure to cold or heat; and by peculiar derangements of the digestive organs, arising from the use of improper food.

Treatment.—This must consist in the administration of emetics and purgatives, where the disease depends upon stomach derangement. In the chronic form, a simple diet, without stimulants of any kind, must be rigidly adhered to; laxatives, antacids, and warm or tepid baths, forming the remaining chief remedies.

SECTION III.—ORDER 2. HÆMORRHAGIA.

1. PURPURA.—This disease arises from a morbid condition of the blood and of the capillaries. The blood is deficient in fibrinous elements, while the capillary vessels are softened; and there is a want of tone in all the tissues. Hence extravasations of blood into the tissues readily occur; either from pressure, or from the force of the circulation.

Symptoms.—The spots or patches vary in colour, being either red, purple, livid, or reddish-brown; they often bear a great resemblance to bruises; pressure does not efface them; they sometimes persist for months; and they are aggravated by impure air, insufficient food, deficient exercise, &c. The constitutional symptoms indicate debility; varying from slight depression, to hectic feverishness, constant faintness, œdema of the lower extremities, and the most complete prostration ending in death.

Species.—Four varieties are commonly enumerated:—*Purpura simplex*, in which the spots are small, the symptoms of mal-assimilation prominent, and the languor and lassitude distressing, but not dangerous: *P. hæmorrhagica*, the local and constitutional symptoms being those of purpura simplex, in a very aggravated form, with the dangerous complication occasionally of internal hæmorrhage: *P. Urticans*, which commences with the formation of slight elevations or rounded wheals like the eruption of nettle-rash, although the irritation of the latter affection is absent: and *P. Senilis*, which occurs frequently in elderly women from some local irritation.

Diagnosis.—This disease must not be confounded with scurvy, which it somewhat resembles. It differs, however, inasmuch as it often appears suddenly; is not owing to any want of vegetable food; and is not attended with a livid, spongy state of the gums.

Treatment.—As purpura is a disease of debility, the treatment must consist in the use of good diet; the removal of any irritant secretions contained in the alimentary canal; tonics, especially quinine and iron, and the mineral acids; and a sojourn at the sea-side during convalescence. The oil of turpentine, in small, frequently repeated doses, has been strongly recommended:—F. 43.

2. Scurvy.—Scorbutus, or scurvy, is a peculiar disease caused by long-continued deprivation of fresh succulent vegetables. It does not often occur during childhood.

Some authors speak of land scurvy and sea scurvy as if they were two different complaints. I believe them to be identical. The same authorities have also regarded land scurvy and purpura as one and the same affection; there is little doubt but that they are very dissimilar.

The *symptoms* of scurvy show themselves gradually, commencing with lassitude, mental anxiety, and difficulty of breathing on the least exertion. The countenance becomes sallow and of a dusky hue; the gums swell, are spongy, of a livid colour, and bleed on the slightest touch; the teeth loosen, and the breath becomes very offensive. As the disease advances the debility increases; the dyspnœa often becomes most urgent; the gums frequently slough, and hæmorrhages occur from them, as well as from the mouth, nose, stomach, and intestines. Ecchymoses or effusions of blood beneath the skin also appear, especially on the lower extremities and trunk; and many parts of the body become discoloured with bruise-like marks, so that the patient appears as if he had been severely beaten. The legs swell; the skin is dry and rough; the urine is scanty; in some instances there has been spontaneous salivation; and there is generally constipation. Unless relieved, the patient dies from exhaustion.

Dr. Garrod believes that in scurvy the blood is deficient in potass, and that this deficiency is indeed the cause of the disease. He shows that all substances which act as antiscorbutics contain this agent, and he has rapidly cured cases by the use of some of its salts. These views have been confirmed by Dr. Hammond, who has cured and prevented the disease by the bicarbonate of potash, when fresh vegetables could not be obtained.*

Treatment.—That usually adopted, consists in the administration of those vegetables, which are remarkable for their antiscorbutic qualities, such as oranges, lemons, potatoes, lime-juice, &c. If we believe in the soundness of Dr. Garrod's opinions, as indeed we are bound to do, we shall employ the tartrate, chlorate, or phosphate of potash:—F. 37, &c.

SECTION IV.—ORDER 3. VESICULÆ.

1. SUDAMINA.—In the progress of many acute and chronic diseases attended with sweating, crops of small transparent vesicles make their appearance. Thus in acute rheumatism, typhoid fever, &c., sudamina are frequently found upon the trunk and extremities; especially in the latter stages of these affections.

Some persons speak of *Miliaria* as a distinct fever arising from constitutional causes, and as differing from *sudamina* produced by copious sweating. The distinction—if it exist—is unimportant; since the vesicles in both cases resemble each other, and disappear spontaneously without requiring any treatment.

2. HERPES.—Herpes, or tetter, is a transient, non-contagious affection, consisting of clusters of globular vesicles upon inflamed patches of irregular size and form. The eruption runs a definite course, rarely continuing for more than two or three weeks; it is not usually severe, nor is it accompanied by any

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* *American Journal of Medical Sciences*, vol. li. January, 1853.

constitutional symptoms. Care must be taken not to mistake its nature, since *herpes præputialis* has been actively treated as syphilis, and *herpes circinatus*—when occurring on the scalp—as tinea tonsurans, or ringworm. A singular species of this disease is known as *herpes zoster*, or *zona*, or the *shingles*, in which the inflamed patches with their clustered vesicles are arranged in the form of a band, encircling half the circumference of the body; in nineteen cases out of twenty the zone will be found to occupy the right side of the body.

Treatment.—Gentle laxatives, warm baths, and a plain, unstimulating diet will alone be called for. The local irritation should be relieved by an emollient lotion, or by the application of the zinc ointment, or the diacetate of lead cerate of the Pharmacopœia.

3. ECZEMA.—*Eczema, crusta lactea, humid tetter*, or *scall*, is a non-contagious disease, consisting of an eruption of small vesicles on various parts of the skin, closely crowded together, and often running into each other, so as to form, on being ruptured, superficial moist excoriations.

Species.—There are several species of this disease. When the eruption consists of minute vesicles on different parts of the skin, without any inflammation, it is called *eczema simplex*; when the skin is inflamed, and there are heat and swelling, *eczema rubrum*. *Eczema impetiginodes* is a severe degree of eczema rubrum. When arising, as it sometimes does, from the effect of great heat, especially from the heat of the sun, it is called *eczema solare*; when as a result of the use of mercury, *eczema mercuriale*.

But the form of this eruption which most concerns us now is that known as *eczema infantile*; inasmuch as infants at the breast and young children are peculiarly subject to it. This variety I shall now describe.

Symptoms.—Eczema infantile, like eczema adultorum, originates in mal-assimilation, and is often due to a faulty secretion of milk on the part of the mother. When it once attacks an infant, it gives rise to the greatest trouble, since it seems to excite all the cutaneous eruptions from which the little patient can possibly suffer. The general health also is likely to be greatly affected by the cause of the disorder, as well as by the intense itching and burning heat of skin which accompanies it; and the sufferer becomes pale, weak, anæmic, and emaciated. "The eruption usually commences," says Mr. Erasmus Wilson, in his graphic description of this malady, "as a patch or blotch of slightly-raised pimples; the patch is itchy, is rubbed, increases in size, becomes more inflamed, the cuticle is raised in more or less defined vesicles, which are usually broken by friction; the surface becomes excoriated, somewhat swollen, and pours out an ichorous secretion, varying from a mere oozing to an excess that wets through everything that is applied to it. With the increase of irritation consequent on the excessive secretion and the congestion which gives rise to it, the patch spreads; where the eruption commenced by several blotches, they probably run into one; the ichorous discharge also increases the local disease, by irritating the parts over which it flows. The case up to this time is one of inflammatory eczema, or *eczema rubrum*. The state of *eczema simplex* has hardly existed, and is only to be seen occasionally; but the disease still runs on, its violence increases, and the morbid secretion, from being a transparent and colourless ichor, like water in appearance, becomes slightly opaque (tinea mucosa), milky, then yellowish and semi-purulent, and the case is transformed into *eczema impetiginodes;* or the discharge may take on a still more decidedly purulent character, while small pustules are developed on the red and tumefied skin around the patch, and then the case is one of *impetigo.* Thus the plus or minus of these pathological conditions is irrespective of the cause or essential nature of the disease; in other words, the disease being the same, it may, according to the temperament or constitution of the child, be an erythema verging upon eczema; an eczema rubrum; an eczema verging on impetigo, or eczema impetiginodes; or, the pustular element being in excess, it may be an impetigo. Again, as I have before said, whatever the predominating character may be, whether erythema, lichen, eczema, or impetigo, there will always be present, in a greater or less degree, some or the whole of the other forms sprinkled over the body; a simple erythema here, an erythema with strophulous or lichen there; a few scattered vesicles of eczema in a third place, or a few congregated psydracious pustules of impetigo in a fourth." *

Sometimes the whole of the body, from head to foot, is covered with these eruptions; the excoriations and scabs being most irritating, and the ichorous discharge from them disgustingly offensive. The hair also becomes matted and entangled with friable crusts resembling particles of mortar; the ears are swollen; the face is bloated; the features are distorted by the discoloured scabs, which sometimes form a huge, unsightly mask; and the child becomes worn out and exhausted with the agony it experiences. Occasionally the danger is increased by the occurrence of diarrhœa; or of congestion or inflammation of the mucous membrane of the air-tubes, lungs, &c.

Treatment.—In attempting to cure eczema infantile—as also, indeed, the other obstinate varieties of this disease—three great indications are to be fulfilled, viz., *elimination*, *alleviation of local distress*, and *restoration of power*.†

For *elimination*, calomel or grey powder is to be administered; one grain of calomel with one of white sugar being the dose for the youngest infant; for a child one year old, a grain and a half; for a child two years old, two grains. The object being to stimulate the liver, and to obtain a perfect clearance of the stomach and bowels, the dose must be repeated according to circumstances—once, twice, or thrice a week as the patient's condition may indicate.

To *alleviate the local distress*, the benzoated oxide of zinc ointment, rubbed down with spirits of wine—F. 84—is to be abundantly and gently applied over every part of the eruption, night and morning. To insure the permanent application and non-disturbance of this dressing, Mr. Wilson orders a little shirt to be made of old linen, which is to be worn constantly, night and day, and for a week together, if necessary. It is intended as a mere envelope or dressing to the inflamed and irritated skin; and its saturation with ointment only contributes to its greater utility. Where the eruption is chiefly confined to the arms or legs, linen sleeves will be sufficient for the purpose. On the face no other covering than the ointment is necessary, but the latter should therefore be used the more largely.

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* *Diseases of the Skin*, p. 171. 4th ed. London, 1857.

† Mr. Wilson. *Opus cit.*, p. 176.

When the oxide of zinc ointment is thus employed, the formation of crusts on the eruption is prevented, in consequence of the exclusion of the atmosphere and the consequent absence of desiccation. And when crusts are already formed, the object to be attained is to soften them by saturating them thoroughly with the ointment, and then by gentle friction to displace them and substitute a thin stratum of the ointment in their place. The inflamed skin is not to be washed; but the exudations are to be gently removed with a soft napkin. On the scalp, the ointment should be applied in the direction of the hair to avoid matting; and as soon as the oozing of ichorous discharge has somewhat subsided, the hair should be gently brushed.

The third indication, *restoration of power*, is fulfilled by correcting the mal-assimilation, and restoring the blood to its normal condition. The chief agent for effecting this, is that valuable alterative tonic, arsenic, which is a most effective and harmless remedy for the youngest infant. The dose of Fowler's solution, for an infant from one month to a year old, is two minims thrice daily. In many cases it may be beneficially conjoined with iron, cod-liver oil, &c.:—F. 40. Should diarrhœa, or inflammation of either of the mucous tracts supervene, the use of the arsenic must be suspended. The diet of the child must be wholesome and nutritious; milk, strong beef-tea, cod-liver oil, &c., being very valuable.

SECTION V.—ORDER 4. BULLÆ.

1. PEMPHIGUS.—This affection is characterized by the appearance of large bullæ, two or three inches in diameter, upon one or more regions of the body. The eruption is generally preceded for twenty-four or forty-eight hours by slight general indisposition, fever, and itching of the skin; small red circular patches then form, gradually increase in extent, and become covered with bullæ, which either fade away on attaining their full size, or burst, and are replaced by thin, brownish-coloured incrustations. The duration of this disease

is usually from one to three weeks, although it occasionally becomes chronic and prolonged for months.

Young infants—particularly such as are brought up in the dirty, ill-ventilated dwellings of the poor—sometimes suffer severely from this disease. Pemphigus infantilis may also be due to over-feeding, to teething, or to some gastric or intestinal irritation.

2. POMPHOLYX is merely a variety of pemphigus, unattended with fever. It runs its course in about eight or ten days; it is very uncommon, especially during childhood. A kind of artificial pompholyx may be produced by the application of cantharides. I remember a girl in King's College Hospital who deceived her physician for a short time by rubbing powdered cantharides into various parts of her person, and thus raising numerous small blisters.

Treatment.—Tonic and alterative medicines, warm bathing, with generous diet and fresh air, appear to be the remedies called for both in pemphigus and pompholyx.

3. RUPIA may be considered as a modification of pemphigus, occurring in persons of debilitated constitutions. It is characterized by the eruption of small flattened bullæ, containing at first serous fluid, which soon becomes purulent or sanguinolent, and concretes or dries into dark, black, rough crusts. When the crusts fall of, they leave circular ulcers, of various sizes, indisposed to heal. It is sometimes dependent upon syphilis, when it is known as *syphilitic rupia.* Most forms are obstinate, often lasting for weeks or months.

Rupia occasionally attacks strumous children, or the offspring of unhealthy parents. When it occurs previous to the infant being weaned, the nurse's state of health should be carefully inquired into, so that, if necessary, a new and strong nurse may be obtained. In older children a nutritious diet should be ordered; with tonics, cod-liver oil, and mild alteratives. Change of air—particularly to the sea-coast—will also do good in all instances.

4. BUTTON SCURVY.—Ecphyma globulus, or button scurvy—as it is popularly misnamed—is a singular cutaneous disease prevalent in the middle and southern counties of Ireland. "This disease," says Dr. Burgess, "is characterized by an erup-

tion of one or more scattered excrescences on different parts of the body, each of which in form resembles a convex button—hence its name—and varies in size from four or five-tenths of an inch to an inch and a quarter in diameter. It is highly contagious (through the medium of the fluid secreted by the excrescence), and is described by some writers, erroneously, as confined to the cuticle. It is not a syphilitic disease; although sometimes bearing a resemblance to the syphilitic condylomata described by Fricke."[*] It is ordinarily unattended by constitutional symptoms; being merely a local affection, as is clearly proved by the ease with which the application of the nitrate of silver generally cures it.

SECTION VI.—ORDER 5. PUSTULÆ.

1. ECTHYMA.—This disease may be defined as an acute inflammation of the skin; characterized by large, round, prominent pustules, occurring upon any part of the body, though very rarely on the face or scalp. The pustules are usually distinct, seated upon a hard inflamed base, and terminate in red stains or in thick dark-coloured scabs, which leave superficial ulcers, followed by cicatrices. This disease not unfrequently occurs in badly-nourished, weakly children; being generally significant of some irritation of the gastro-intestinal mucous membrane. Ecthyma infantile often terminates in desquamation; the pustules, after threatening to suppurate, gradually diminishing and disappearing.

Treatment.—This must consist in the use of gentle laxatives, with alteratives, slightly acid drinks, and spare diet. Water-dressing, or the lotio plumbi, or the unguentum zinci, may be applied to the pustules.

2. IMPETIGO.—*Impetigo*, or *running tetter*, is a severe non-contagious inflammation of the skin; characterized by an eruption of small hemispheroidal or flattened pustules, most frequently grouped in clusters, and forming thick, rough, yellowish scabs or incrustations. From beneath the incrustations a discharge takes place; the crusts become thicker and larger; and they fall off, leaving a raw surface. The mode of

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[*] Burgess's translation of Cazenave's *Manual on Skin Diseases*. 2nd ed., p. 160. London, 1854.

distribution of the pustules has caused a division of the disease into two varieties—*impetigo figurata* and *impetigo sparsa.* The first occurs generally on the face, especially on the cheeks; it is attended with constitutional disturbance; and as the pustules burst and form greenish-yellow crusts, resembling patches of dried honey, the heat and itching become intolerable. In children the impetiginous eruption sometimes covers the face like a mask, and is called *crusta lactea.* The second form merely differs from the first, inasmuch as the pustules are more scattered, being sometimes sprinkled—as it were—over an entire limb, or even over the whole body.

The constitutional symptoms are generally very slight, lassitude and headache being the most prominent: but when this troublesome and offensive disease is prolonged, a state of debility is induced.

Treatment.—During the inflammatory stage sedative fomentations and water-dressing give relief. Subsequently, the benzoated oxide of zinc ointment rubbed down with spirits of wine or glycerine, freely applied night and morning, does great good; or a lotion of equal parts of olive oil and lime-water will be found soothing. The constitutional treatment must consist in attention to diet, the exhibition of mild laxatives, with salines or alkalies; and afterwards the use of tonics, especially the bitter infusions and tinctures of gentian, calumba, cinchona, or quassia. When stubborn it may be necessary to resort to Fowler's solution of arsenic, in two or three minim doses thrice daily; or to the liquor hydriodatis arsenici et hydrargyri—known as Donovan's solution—in rather larger quantities.

3. EQUINIA.—*Equinia*, *Farcinoma*, *Farcy*, or *Glanders*, is attended by *symptoms* somewhat similar to those of glanders in the horse; viz., by fever, great debility, pains in the limbs, profuse offensive discharge from the nostrils, and the formation of a number of pustules and tumours in different parts of the body, which have a great tendency to suppurate and become gangrenous. The pustular eruption does not appear until about the twelfth day; it is accompanied by profuse fœtid sweats, and sometimes by the formation of black bullæ. The disease generally proves fatal before the twentieth day.

It occurs for the most part in grooms, stablemen, &c. There is abundant proof of the transmission of the glanders from the horse to man.

No *treatment* seems hitherto to have been of any service. I can only recommend stimulants, and a trial of the salts of potass, especially the chlorate.

SECTION VII.—ORDER 6. PARASITICI.

1. TINEA TONSURANS.—*Tinea tonsurans*, *porrigo scutulata*, or, vulgarly, *ringworm*, is a chronic contagious disease, caused by a parasitic mucedinous plant—the *Tricophyton tonsurans*. It occurs in circular or oval, and slightly-elevated patches, each patch having the appearance of a thin layer of scurf. There is slight itching; and as—when the disease affects the head—the hairs are rendered dry, discoloured, and brittle by this affection, they are readily broken off at variable distances from the scalp. In the early stages there is no discharge, and frequently none appears during the whole progress of the complaint: but in some the irritation of the scaly crusts produces such itching that the rude attempts constantly made to relieve their annoyance give rise to inflammation of the skin, followed by an ichorous discharge. The patches spread at their circumference, and the rings sometimes assume considerable dimensions. In almost all instances we shall find symptoms of deranged nutrition: the child is languid, pale, and—in short—out of health.

The most frequent seat of the disease is the head, but it is often seen on the neck, arms, and other parts of the body. Mr. Erasmus Wilson does not believe that it is contagious: my own experience inclines to an opposite conclusion, and I think most practitioners will support this opinion. When this disease breaks out in a school, it is for the time a great nuisance.

2. TINEA FAVOSA—termed porrigo favosa by Willan and Bateman—most commonly affects the scalp, in the form of small cup-shaped, dry, bright-yellow crusts; each containing a hair in its centre, and somewhat resembling a piece of honeycomb. The scabs gradually increase in size, and are highly contagious. At first the small yellow pustules are

distinct, but they soon become confluent, and form continuous scabs; they produce troublesome itching; and on removal of the scabs eroded surfaces are left. The parasitic plant causing or accompanying this offensive and troublesome disease is the *Achorion Schönleinii.*

3. Tinea Decalvans—or *Porrigo decalvans*—is readily diagnosed by the perfectly smooth bald patches which result from the hair falling off on one or more circular spots; these spots varying in size from a sixpenny piece to five or six inches in circumference. The parasitic vegetable is *Microsporon Audouini.*

4. Tinea Sycosis—the last species of tinea—is characterized by inflammation of the hair-follicles, causing successive eruptions of small acuminated pustules, occurring most frequently upon the chin and other parts occupied by the beard; it rarely occurs on the scalp, and rarely affects women. It is called mentagra by Willan and Bateman, and sycosis by Cazenave. The parasite is the *Microsporon mentagrophytes.*

Treatment.—This is the same in all the varieties of tinea. Great attention must be paid to cleanliness, daily washing with common yellow soap and water being attended with great advantage. Shaving the head is seldom necessary, but the hair must be kept short. Should there be any scabs or incrustations they must be removed by poultices or water-dressing. We then attempt to cure the disease by destroying the spores of the parasitic plant. This may be effected in many ways. Having always been successful with a lotion of sulphurous acid, as first recommended by Dr. Jenner [*]—F. 93—I always resort to this agent. Other practitioners employ acetic acid; or a lotion of sulphuret of potass—ʒj. to water Oj.; or they paint the affected parts with the acetum cantharidis; or they apply a stimulating ointment, such as the diluted unguentum hydrargyri nitratis, or a mixture of equal parts of the unguentum hydrargyri ammonio chloridi and the unguentum picis liquidæ.

In all cases the local treatment must be conjoined with constitutional remedies, since the spores of these microscopic plants find their most congenial nidus in weakly children.

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[*] *Medical Times and Gazette*, 20 August, 1853.

Hence, the child should be taken away from its books; allowed to be much in the open air; fed well upon plain nourishing food; warmly clothed; and be strengthened by tonics, especially quinine and steel.

5. Plica Polonica—or *Trichosis Plica*, or *Polish ringworm*—is a disease of the hair little known in this country. It is characterized by tenderness and inflammation of the scalp; the hairs become swollen and imperfectly formed; and the hair-follicles secrete a large quantity of viscid, reddish-coloured fluid, which glues the hairs together, uniting them into a mass. It is caused, or accompanied, by two parasitic plants—the *Trichophyton tonsurans* and *Trichophyton sporuloides*. As regards the *treatment* of this disease little is known, but it is usually recommended that the diseased hairs should not be cut. I should myself resort to the use of the sulphurous acid lotion, so beneficial in analogous diseases.

6. Chloasma.—*Chloasma*, *pityriasis versicolor*, or *liver-spot*, makes its appearance generally on the front of the chest or abdomen, in the form of small spots of a dull-reddish colour, which gradually increase in size, and assume a yellow tint. It may last from a few days to many months or years. It is contagious. According to Eichstedt, this disease is caused by a cryptogamic plant—*Microsporon furfur*. It may be cured by the use of the sulphurous acid lotion, or by a lotion of bichloride of mercury in water (gr. ij. to ℥j.), applied night and morning. Mr. Startin considers that it is apt to return, if an arsenical course be omitted. I have, however, cured cases by the mercurial lotion alone, continuing its use for a short time after the disappearance of the eruption.

7. Scabies.—*Scabies*, or *psora*, or *the itch*, is a contagious disease—contagious in that sense which implies contact—consisting of a vesicular eruption, presenting a number of watery heads, attended with violent itching. It may occur on any part of the body, but it is most frequently found in the flexures of the joints—especially on the fingers. An opinion prevails that scabies never attacks the face; but this seems to be incorrect, for I am told that at the Hospital for Diseases of the Skin, cases of its occurrence in this locality, are not uncommon. The cause of the disease is an insect called the

Acarus scabiei; which is to be found about a line from, but not in, each vesicle.*

Treatment.—Scabies never disappears spontaneously. It is readily cured by killing the insect, and perhaps no agent does this so readily as sulphur. Hence, after a good washing, the affected parts are to be well covered with sulphur ointment, or a sulphur bath may be used. As the patient's clothes will probably be contaminated, they must either be destroyed, or at all events thoroughly fumigated with sulphurous acid gas, which may be procured by igniting a rag dipped in melted sulphur.

When scabies is complicated with other eruptions, it must be cured before attempting the relief of the latter.

SECTION VIII.—ORDER 7. PAPULÆ.

1. LICHEN.—This is a papular affection readily recognised by the minute, hard, red elevations of the skin which it presents, together with the annoying pruritus. There are three forms:—

Lichen simplex, in which the eruption consists of small agglomerated papulæ, rarely larger than a millet seed.

Lichen strophulus, or *red-gum*, *tooth-rash*, *&c.*, which generally attacks infants at the breast; and is characterized by an eruption of minute, hard, sometimes slightly-red pimples, attended with itching, and appearing upon part or the whole surface of the body.

And *Lichen agrius*, in which the papulæ are more inflamed, and developed on an erythematous surface, which appears hot and painfully distended. The itching is very intense, and the duration of this form is often very prolonged.

Treatment.—Tepid baths, mild laxatives, and acidulous drinks will cure most forms of lichen. The irritation is best relieved by a weak lotion of the liquor plumbi diacetatis, to which a little hydrocyanic acid may be added.

2. PRURIGO.—*Prurigo—itching*—is a cutaneous disease characterized by an eruption of small papulæ or pimples, of the natural colour of the skin. It is a chronic affection, lasting

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* For a description of this little parasite, the reader may be referred to the Author's *Manual of Clinical Medicine*, p. 285. London, 1855.

for months or years, and causing great discomfort, not to say misery. Patients afflicted with it scratch and tear themselves constantly till the blood flows; their sufferings are aggravated by warmth. Willan describes three varieties—*prurigo mitis*, *prurigo formicans*, and *prurigo senilis*. The first is the mildest form; in the second, the itching is combined with a sensation like the creeping of ants or the stinging of insects; while the third occurs in old persons, and is the most obstinate, often continuing for the rest of the patient's life.

Diagnosis.—The itching arising from prurigo must not be confounded with that caused by insects. I may here mention that the human body is infested with four kinds of lice, viz., the *Pediculus vestimenti*, or *clothes' louse;* the *Pediculus capitis*, or *head louse*, which lives in the hair; the *Pediculus ciliorum*, or *louse of the eyebrows;* and the *Pediculus pubis*, or *crab louse*, which infests the hair of the pubes. They are all destroyed by mercurial ointment, or by dusting the parts with calomel, or by washing them with infusion of tobacco.

Treatment.—Alkaline, or sulphur, or plain water baths should be used daily; the temperature should not exceed 70° Fah. The local applications which give the most relief are vinegar, lime-water, a weak solution of bichloride of mercury, a dilute solution of creosote, a lotion containing prussic acid, tar ointment, an ointment containing a small quantity of aconitine, &c.

The general treatment must consist of a light and cooling regimen, the avoidance of stimulating food or drink, and the use of laxatives, sarsaparilla, acid tonics, or even the liquor potassæ arsenitis.

Dr. Bowling, of Kentucky, says in a letter to Dr. Watson, that he has cured numerous cases of prurigo senilis thus:—"I direct that the affected parts be sponged for a minute or so with good apple-vinegar, and then be allowed time to dry. After this they are to be *smeared* over with citrine ointment (*unguentum hydrargyri nitratis*). The applications are to be made twice a day. The cure is usually effected in a week."

SECTION IX.—ORDER 8. SQUAMÆ.

1. LEPRA.—*Lepra*, or *lepra vulgaris*, is perhaps the most obstinate and troublesome of all cutaneous diseases: but it is very

rarely seen in children. It is a non-contagious chronic eruption; consisting of red, scaly, circular patches, of various dimensions, scattered over different parts of the body, but most frequently found in the neighbourhood of the joints, especially near the knee and elbow. By degrees, the patches increase in size and number, and extend along the extremities to the trunk.

When the patches are small, white, and of long standing, the disease is termed *lepra alphoides;* when copper coloured, and the result of syphilis, *syphilitic lepra.*

Treatment.—All local applications, with the exception of alkaline baths, or the simple warm bath, are useless. Liquor potassæ, in large doses, thrice daily, is often beneficial; or the liquor potassæ arsenitis; or the triple compound of iodine, arsenic, and mercury, known as Donovan's solution, may be cautiously given with the greatest advantage. Where these remedies fail, the decoction of dulcamara, or decoction of sarsaparilla and bichloride of mercury, tar capsules, tincture of cantharides, or the iodide of potassium, may be tried: mercury will generally cure the syphilitic form. The Harrowgate waters have been recommended. At the same time, the diet must be very simple, and all stimulating food or drink avoided. During an arsenical course, all acids, fruits, and vegetables should be abstained from.

2. PSORIASIS.—*Psoriasis, psora leprosa,* or *dry tetter,* is a chronic, non-contagious inflammation of the derma; characterized by the development of patches, of various extent and form, slightly raised above the level of the skin, covered by thin, whitish scales of altered epidermis, and accompanied by rhagades or fissures of the skin. The eruption may be local, or it may be diffused over the whole body. The *local* varieties consist of psoriasis palpebrarum, psoriasis labialis, psoriasis præputialis, psoriasis scrotalis, psoriasis palmaris, and psoriasis unguinum. The *general* varieties are psoriasis vulgaris, psoriasis gyrata, and psoriasis inveterata.

Psoriasis is closely allied to lepra in its appearance, and general pathology: in the former disease, the patches are irregular, and not depressed in the centre; in the latter, they are circular, and depressed in the centre, with elevated margins. Both affections are sometimes hereditary, and both require the same treatment.

3. Pityriasis.—This disease is a chronic inflammation of the skin, attended with redness and itching, and characterized by the production of minute white scales or scurf in great quantity. It may attack any region, but the scalp and parts covered with hair are the most common seats of it. The desquamation takes place copiously and incessantly.

Treatment.—Some tonic infusion, an occasional purgative, and the use of alkaline lotions to the affected part. Occasionally the unguentum hydrargyri nitratis mitius does much good, applied daily. When the head is the part affected, the hair should be cut off close to the scalp, with a pair of scissors. Great cleanliness is, of course, essential. It is often very rebellious to treatment.

4. Icthyosis.—*Icthyosis, the fish-skin disease,* is characterized by the development, upon one or more parts of the integuments of thick, hard, dry, imbricated scales of a dirty-grey colour, resting upon an uninflamed surface, and unattended by heat, pain, or itching. It is said to be a congenital disease, and to last during life.

Simple warm and alkaline baths may be used as palliatives; no other treatment seems of any use. Donovan's triple solution might be tried.

SECTON X.—ORDER 9. TUBERCULA.

1. Elephantiasis.—There are two species of this disease; viz., *Elephantiasis Græcorum*, and *E. Arabicum*.

Elephantiasis Græcorum is a terrible and dangerous affection; non-contagious, hereditary, and generally incurable. It is characterized by the appearance of patches of a purplish colour; succeeded by elevated tumours, having the same tint, irregular in shape and size, soft, smooth, and insensible to the touch, and which generally—after a certain time—become the seat of unhealthy ulceration. It is not met with in temperate climates, but there is found to be a disposition to it as we approach the polar regions on the one hand, and the tropics on the other. Males suffer from it more than females. It is designated by the Jews *tsaraath.*

Elephantiasis Arabicum is characterized by great swelling and induration of the skin and of the subjacent areolar and adipose tissues, producing marked deformity. It frequently attacks one of the lower extremities, causing great swelling so that the limb becomes double its natural size; hardness; severe pain; and an appearance resembling—it is fancifully said—the leg of an elephant. It is uncommon in Europe, occurring principally in the West Indies; it generally continues for life; causes alarming constitutional disturbance; is neither contagious nor hereditary; and attacks males and females, rich and poor, indiscriminately.

2. MOLLUSCUM.—This affection—so called from the similarity of the tubercles characterizing it to the eminences growing on the bark of the maple-tree—consists in the presence of small tumours, varying in size from a pea to a pigeon's egg, sometimes of a brown colour, and sometimes growing from a broad base, and sometimes from a narrow peduncle. There are two forms—one contagious, the other not. Contagious molluscum is a very rare, severe, and chronic affection: Bateman saw two cases only. Non-contagious molluscum is less severe, and does not produce so much irritation as the opposite kind; after a time the tumours neither grow nor alter, but remain stationary for life.

3. ACNE.—Acne, or gutta rosacea, or coppernose, is a chronic pustular affection; characterized by small pustules with a deep-red base; leaving behind small, hard, red tumours, the seat of which appears to be the sebaceous follicles of the skin. It appears most frequently between the ages of eighteen and forty, is often very chronic, and affects especially the temples, nose, cheeks, and forehead.

4. LUPUS.—Lupus is a most formidable affection. Dr. Burgess, in his excellent translation of Cazenave, says that it commences with purple and red spots, or more frequently livid indolent tubercles; the chief character of which is their tendency to end in destructive ulceration of the surrounding parts. There are two varieties of this disease, *lupus non exedens*, and *lupus exedens* or *noli me tangere*. In the *first* there is no ulceration, yet the tubercles leave deep cicatrized pits behind them; when it spreads rapidly and superficially, it

leaves the skin crossed by white scar-like ridges and bands. The *second* is very destructive; it attacks the nose more frequently than any other region of the body, though why it does so is unknown. The extent of parts which it destroys varies; sometimes the whole nose being eaten away, sometimes only the point.

Treatment.—A prolonged course of the liquor hydriodatis arsenici et hydrargyri, or of the liquor potassæ arsenitis, or of iodide of potassium in decoction of sarsaparilla, is necessary in both varieties.

As a local remedy in lupus non exedens, Mr. Wilson recommends the occasional application of the acetum cantharidis, made with strong acetic acid. In lupus exedens, chloride of zinc, or potassa fusa, or nitric acid, must be used to destroy ulcerated surface, and excite the capillaries to a more healthy action.

5. FRAMBŒSIA.—Frambœsia, or pian, or yaws—in Guinea, is rarely met with in Europe, but is common in Africa, America, and the West Indies. Without any precursory symptoms, parts of the skin—especially about the face, scalp, axillæ, or genital organs—become covered with small dusky-red spots; which gradually become converted into larger tubercles, isolated at their summits, but collected together at their bases, and often resembling raspberries or mulberries in their colour and form. The tubercles are generally hard, covered with dry scales, and are sometimes inflamed; if the inflammation spreads, ulceration sets in, and a yellow sanious discharge results, which forms scabs around the tumours. The disease continues for years, or even for life.

6. KELOID. — *Keloid*, *Cheloidea*, or *cancroide*, was first described by Alibert under the above names, owing to the disease presenting a flattish raised patch of integument resembling the shell of a tortoise. It forms small, flat, painful tumours, one or two inches in diameter, raised a few lines above the level of the skin, having irregular forms, slight depressions in their centres, and being covered with wrinkled epidermis. Sometimes there is only one tumour, sometimes several; the disease is developed slowly, rarely ends in ulceration, often disappears spontaneously merely leaving a cicatrix, is usually

found on the chest between the mammæ, and is very uncommon.

SECTION XI.—ORDER 10. MACULÆ.

1. Changes of Colour.—The skin sometimes becomes of a bronze or slate colour; as may occur—either—after the long-continued use of nitrate of silver, or naturally without any appreciable cause. The change is generally permanent: it is termed *Nigrities*, when the formation of pigment is so excessive that the skin is rendered of a slate colour, or even black.—One of the prominent symptoms of disease of the supra-renal capsules is, according to Dr. Addison, bronzing of the skin: though why there should be such a remarkable excess of pigment in this affection we cannot tell. The deepening of colour which takes place in the areola of a pregnant woman is a familiar example of this physiological change, and not the less remarkable because of its constant occurrence.

Lentigo, or *Freckles*, or *Sunburn*, is generally congenital; the spots mostly cover the parts of the body exposed to light. Freckles are more common in the fair than the dark complexioned; they are sometimes excited by the sun, and are most common in warm countries.

Ephelides are yellow irregular spots, which sometimes appear temporarily on the chest, abdomen, and groins, from errors in diet, &c.

2. Loss of Colour.—The absence of the colouring matter of the skin may be congenital or accidental.

In *Albinismus* the skin is of a dull-white, milky colour; the body is covered with a woolly white down; and the eyebrows, eyelashes, and hairs generally, are smooth, silky, and white. The iris is of a rose colour, and the pupils present a deep-red appearance, owing to the absence of pigment in the choroid and uvea. The Albino is generally weak minded, and of a delicate constitution: he is found amongst all the races of mankind.

When the skin is the seat of a partial discoloration, congenital or accidental, the affection is known as *vitiligo*. The discoloration may appear on any part of the body in the form of smooth, milky-white coloured patches; when it occurs on the scalp it causes baldness. It may occur at all ages, and it generally lasts for years.

CHAPTER XII.

THE ERUPTIVE FEVERS.

SECTION I.—INTRODUCTION.

THE eruptive fevers may be regarded as continued fevers, having an eruption superadded. The diseases of this class are—*Small-Pox*, *Cow-Pox*, *Chicken-Pox*, *Measles*, and *Scarlet Fever.* In some points these affections resemble those diseases of the skin which I have already described under the Orders Exanthemata, Vesiculæ, and Pustulæ; and hence writers on cutaneous disorders often treat of them under these heads. But since this arrangement is neither scientific nor convenient, I prefer simply considering them as eruptive fevers.

The diseases now to be described have this common character:—They have a period of incubation—that is to say, a certain time elapses between the hour of infection and the establishment of fever, during which the patient's health is apparently unaffected; they are accompanied by fever, which is generally essentially inflammatory, and runs a defined course; they are attended by an eruption which runs through a regular series of changes; they for the most part affect every individual once, and once only, during life; they arise from specific contagion; and their progress cannot be stayed by medicine.

The following table shows the period of incubation, date of appearance of the eruption, and time of its disappearance, in measles, scarlet fever, and small-pox:—

Disease.	Period of Incubation.	Eruption Appears.	Eruption Fades.
Measles .	10 to 14 days	On 4th day of fever	On 7th day of fever.
Scarlet fever	4 to 6 days	On 2nd day of fever	On 5th day of fever.
Small-pox .	12 days	On 3rd day of fever	Scabs form on 9th or 10th day of fever, and fall off about the 14th.

The symptoms of the eruptive fevers are usually well defined, and to the practical physician their diagnosis becomes easy. But occasionally instances are met with where one or more of the most important symptoms are absent: a fact which ought constantly to be borne in mind, in the treatment of the obscure diseases of childhood. Thus, there is no doubt that cases of scarlatina occasionally occur, marked by an absence of all external efflorescence; or patients may even die poisoned by the virus of the scarlatinal poison before there has been time for the eruption to appear. Dr. Graves very truly remarks—"A constitutional affection may display its existence by only one or two of the numerous symptoms which usually accompany it: and this occurrence seems more frequent in the case of diseases produced by contagion and morbid animal or vegetable poisons, than in the case of maladies generated by causes developed in the system itself."[*]

It is doubtful whether or not a disease should be described, which presents many of the characters of measles and scarlet fever conjoined; and which some systematic writers have described under the names of *Rubeola sine catarrho*, or *Scarlatina morbillosa*, or *hybrid measles or scarlet fever.* I am inclined to think, however, that such a description is unnecessary, inasmuch as the symptoms are such as would be expected in such a bastard disorder; the treatment requires little or no modification; and it would appear like a retrograde step to those old times, when all the eruptive fevers were regarded as modifications of the same disease. True measles and scarlatina are, no doubt, nearly allied; and now the hypothesis of John Hunter,[†] that two specific diseases cannot exist in the body at the same time, is proved to have no real foundation, there seems little reason to doubt that an individual exposed to the contagion of both poisons may suffer from a hybrid disorder compounded of the two fevers.

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[*] *Clinical Lectures on the Practice of Medicine.* 2nd ed. Edited by Dr. Neligan, vol. i., p. 349. Dublin, 1848.

[†] "As I reckon every operation in the body an action, whether universal or partial, it appears to me, beyond a doubt, that no two actions can take place in the same constitution, nor in the same part, at one and the same time; the operations of the body are similar, in this respect, to actions or motions in common matter. It naturally results from this principle, that no two different fevers can exist in the same constitution, nor two local diseases in the same part, at the same time." Vol. iii., p. 4. *Hunter's Works.* Palmer's edition. London, 1837.

Moreover, Mr. Marson, in a paper on the coexistence of variola and scarlatina, adduces several instances of the simultaneous occurrence not only of those two fevers, but also of variola and rubeola, variola and pertussis, variola and vaccinia, rubeola and scarlatina, rubeola and vaccinia, rubeola and pertussis, varicella and vaccinia, and pertussis and vaccinia.*

SECTION II.—VARIOLA, OR SMALL-POX.

Variola, or small-pox, may be defined as a contagious and infectious fever; commencing with lassitude, headache, stupor, mental depression, rigors, heat of skin, vomiting, and pain in the back and loins; and succeeded on the third day by an eruption of pimples, which in the course of a week inflame and suppurate. In many instances it is accompanied by a similar affection of the mucous membrane of the nose and mouth; in some, by swelling and inflammation of the subjacent cellular tissue; and occasionally, by affection of the nervous system. When the vomiting and pain of the back are violent, they are generally the precursors of a severe form of the disease.

The period of incubation, or the time which elapses from the hour of infection to the establishment of the fever, is twelve days; during which the patient's health is apparently perfect. It is curious that, when the disease is received into the system by inoculation, only seven days elapse between the reception of the virus and the appearance of the fever. There is no contagion so powerful or so certain as that of small-pox: the period when transmission is most likely to happen is during the suppurative stage. As a rule, the susceptibility of the constitution to the action of the poison is exhausted by one attack: but cases of recurrent small-pox have occurred, though rarely.

The peculiar eruption of pimples or papulæ always begins to show itself on the third day of the fever; first appearing on the face, the neck and wrists, the trunk, and, lastly, on the lower extremities. The papulæ then gradually ripen into pustules, the suppuration being complete by the ninth or tenth day; at which time the pustules break, and crusts or scabs form. In four or five days more these scabs are falling off.

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* *Medico-Chirurgical Transactions*, vol. xxx. p. 129. London, 1847.

The fever of small-pox is remarkable; inasmuch as it remits entirely when the eruption comes out, but reappears about the end of the eighth day of the disease in the distinct, and on the eleventh day in the confluent form.

Now the severity of small-pox almost always bears a direct relation to the quantity of the eruption. When the pustules are few, they remain distinct and separate from each other; when very numerous, they run together, coalesce, and lose their regularly circumscribed circular form. We thus have a division of this disease into two varieties—*variola discreta* and *variola confluens*. The former is seldom attended with danger; the latter is never free from it. The eruption on the face may be of the confluent form, while it is scanty elsewhere; still the disease is of the confluent kind. Sometimes the pustules are so numerous that they touch each other, but nevertheless do not coalesce; the disease has then been said to be of the *cohering* or *semiconfluent* form.

In *variola discreta*, the eruption, in the words of Willan, is papular. On the third day a small vesicle, with a central depression, appears on each papula, containing some thin transparent lymph; around this an inflamed areola forms. About the fifth day of the eruption, or the eighth of the disease, the vesicles lose their central depression, become turgid, and hemispheroidal. Suppuration has occurred, and the vesicles have become pustules, containing yellowish matter. A peculiar disagreeable odour now begins to emanate from the patient, which once smelt cannot be forgotten; from it alone the disease may be diagnosed. About the eighth day a dark spot appears on the top of each pustule, the cuticle bursts, the matter oozes out, and the pustule dries into a scab. In about four or six days more the crusts fall off, leaving a purplish-red stain, which slowly fades; or where the pustule has gone so deep as to destroy a portion of the true skin, that permanent disfigurement—the so-called pitting or pock-mark—results.

Variola confluens is usually ushered in by more violent fever, greater sickness, and more intense pain in the back, than in the discrete variety. The eruption comes out earlier; the eyelids swell, so that by the fifth day the patient is often unable to see; the parotid glands become affected; there is salivation also; and the limbs swell. The vesicles on the face run together into one bleb, containing a thin brownish ichor; the face is pale and doughy. The vesicles on the trunk and extremities, though often not confluent, have no areola, and are pale. On the breaking of the pustules, large black or brown scabs are formed, exhaling great fœtor; pulse rapid; great debility; and restlessness. The mucous membranes become involved; those of the nose, mouth, larynx, and trachea are the seat of an eruption; tongue and palate covered with vesicles; throat is very sore; there is difficulty of swallowing; hoarseness; dyspnœa; cough; the glottis often becomes narrowed, and suffocation may ensue. Delirium frequently occurs; usually of a low muttering kind. When to the foregoing symptoms malignancy and putrescency are added, the disease becomes *malignant small-pox*.

But the greatest difference between variola discreta and variola confluens is in the *secondary fever;* which sets in usually about the eighth day of the disease in the former, and on the eleventh in the latter. In variola discreta this secondary fever is generally slightly marked; the patient being merely hot, restless, and uncomfortable. But in variola confluens, the fever is intense and perilous; the pulse is weak and rapid, the tongue brown and dry, there is great prostration, general tremors, coldness of the extremities, collapse of the features, and generally delirium. Occasionally the fever at once proves fatal, the system appearing to be overwhelmed by the virulence of the poison. In all cases the greatest care and the most attentive nursing will be required. Should any complications arise—as erysipelas, phlebitis, pneumonia, inflammation of the urinary organs, ophthalmia, &c., the danger will be much increased.

Prognosis.—This disease is seldom fatal to young people between seven and fourteen years of age: it is, however, very dangerous to infants and delicate children. The more confluent the eruption, the greater the danger; the more perfect the maturation of the pustules on the fourth day, the less the danger. The more abundant the eruption, the greater the danger: for inasmuch as the pustules eliminate the morbid poison existing in the blood, and are thus essential to the cure, so their quantity also indicates the extent to which the blood has been poisoned. The provident action by which these small abscesses are so beneficial, has been denominated by Dr. Addison "cell-therapeutics."* Of those who die, nearly one-half do so between the seventh and eleventh days of the eruption. Delirium, a suppression of the perspiration, scanty urine, hæmaturia, great hoarseness, a sudden suppression of diarrhœa when present, are dangerous symptoms: the formation of abscesses or sloughing sores, the occurrence of convulsions, of erysipelas, or of other complications, are circumstances which increase the probability of a fatal termination.

Treatment.—In the treatment of small-pox, as of the other eruptive fevers, the practitioner must not attempt too much; and especially must he endeavour to aid, and not to thwart Nature. There are three rules to bear in mind:—1. To moderate the fever, when it is violent, by salines, mild laxatives, cooling drinks, and cold or tepid sponging. 2. To support the vital powers when they flag, by stimulants, nourishing broths, and milk. 3. To combat any complications that arise with great caution; remembering that antiphlogistic remedies are badly borne by a system already prostrated by a debilitating poison.

Distinct small-pox requires but little treatment; and if the young patient is doing well, no medicine whatever should be given, notwithstanding the wishes of the parents or nurses to the contrary. I say this, because a popular belief still exists that drugs can cut short this affection; and old women—of both sexes—are very fond of *doing something*. Consequently the practitioner will be contented with ordering a plain, unstimulating regimen; he will watch the child to detect any complications as early as possible; he will direct the sick-room to be kept cool, and the bed-linen to be light and often changed; and if thirst is complained of, he will allow plenty of water, or milk and water, or lemonade, or the juice of ripe subacid fruits.

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* *On Cell-Therapeutics*, by W. Addison, M.D., &c. London, 1856.

Supposing the case does not proceed as favourably as could be wished, the prominent symptoms must claim attention. Thus, if the bowels are confined, mild vegetable purgatives may be administered; when there is great heat of skin, the surface should be sponged every three or four hours with tepid or cold water, and effervescing salines or soda-water freely given; where there is great irritability, I have seen opiates in small doses act very beneficially; and when the throat is affected, emetics and gargles of sulphate of zinc—gr. v. to water ℥j.—or of the compound infusion of roses, afford relief. Should the maturation of the pustules go on tardily, good broths and a little wine and water, or ammonia in camphor mixture, will be called for; at the same time that the condition of all the internal organs is carefully looked to.

In treating the secondary fever, attend to the bowels; administer sedatives if there be much irritability; and support the system by a nourishing but digestible diet, such as strong beef-tea, milk, the yolk of one or two eggs daily, &c. Sloughy and gangrenous sores demand the application of poultices or fomentations; the liberal administration of wine and brandy, or of cordial medicines; and when they occur on the back or nates, the patient should be placed on a water-bed, or on one of Hooper's large water-pillows.

With regard to the prevention of pitting, several means have been recommended, though I know of none entitled to much confidence. The agent in which I have most faith for this purpose is the calamine cerate; which can do no harm, at all events, when freely applied. Further evidence is wanted of the utility of covering the face with gold-leaf, or with mercurial ointment, or with a solution of corrosive sublimate, or with the tincture of iodine, or with a strong solution of nitrate of silver, before advising any such applications. To relieve the intolerable itching of the pustules, they may be smeared with the calamine cerate diluted with olive oil, or with cold cream, or, what is better, carron oil—F. 85. When the pustules have burst, some dry powder, as the oxide of zinc, or powdered starch, should be freely applied, to absorb the matter.

SECTION III.—VACCINIA, OR COW-POX.

Since the discovery of *Vaccination* by Jenner,* towards the close of the eighteenth century, the fatality of small-pox has

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* Edward Jenner, the son of the Rev. Stephen Jenner, vicar of Berkley, in Gloucestershire, was born 17 May, 1749. While serving his apprenticeship to Mr. Ludlow, a surgeon at Sodbury, near Bristol, a young woman came to the house, and the conversation happening to turn upon small-pox, she said; "I cannot take the disease, for I have had the cow-pox." This observation made a great impression upon Jenner's mind: but did not bear fruit for some years.—After completing his professional education in London, during two years of which time he resided with John Hunter, he went to Berkley to practise; and seems often to have thought over the possibility of demonstrating the preservative powers of the cow-pox against small-pox. It was not, however, until he had taken his doctor's degree at St. Andrew's, in 1792, that he had leisure thoroughly to investigate the subject; and in 1795, he persuaded fourteen persons who had previously had the cow-pox to be inoculated for the small-pox, not one of whom—as he had hoped and anticipated—took the infection. His experiments were continued, and in 1798 he published the results and came to London. During the three months he remained in town, he could not induce a single person to be vaccinated; and the paper which he wrote for the Royal Society was declined by this learned body. After he had returned home, Mr. Cline wrote and advised him to settle in London, assuring him of a practice of 10,000*l.* a-year. Here is Jenner's reply: "It is very clear, from your representation, that there is now an opening in town for any physician whose reputation stood fair in the public eye. But here, my dear friend, is the rub. Shall I, who, even in the morning of my days, sought the lowly and sequestered paths of life—the valley, and not the mountain—shall I, now my evening is fast approaching, hold myself up for fortune and for fame? Admitting it as a certainty that I obtain both, what stock shall I add to my little fund of happiness? My fortune, with what flows from my profession, is sufficient to gratify my wishes. Indeed, so limited is my ambition, and that of my nearest connexions, that were I precluded from future practice, I should be enabled to obtain all I want; and as for fame, what is it?—a gilded butt, for ever pierced with the arrows of malignancy. The name of John Hunter stamps this observation with the signature of truth." However, it was absolutely necessary that Jenner should come to London to explain his views. He did so; he succeeded in satisfying the profession and the public that he had indeed been intrusted with "the mighty and responsible office of shutting one of the great gates of human death;" and his triumph was ultimately complete.

In 1807, Parliament voted Dr. Jenner 30,000*l.* as a reward for his disbeen most considerably diminished: so that whereas for the ten years ending 1800 the average annual mortality from this disease within the Bills of Mortality was 1,780 in a population of 261,233, this number was reduced to an average annual amount of 821—for the fourteen years ending 1855—with a population of above 2,250,000.

When vaccination has been successfully performed on a healthy child, an elevation may be felt over the puncture on the second day, accompanied by slight redness; on the fifth, a distinct oval or circular vesicle is formed, having an elevated edge and depressed centre; on the eighth, it is of a pearl colour, and is distended with a clear lymph. This vesicle is composed of a number of cells, by the walls and floor of which the lymph is secreted. An inflamed ring or areola now begins to form round the base of the vesicle, and to increase during the two succeeding days; about the eleventh day it fades; and the vesicle, which has now burst and acquired a brown colour, has by the end of the second week become converted into a hard round scab. This falls off about the twenty-first day; leaving a circular, depressed, striated cicatrix, which is usually permanent in after life.

The constitutional disturbance which accompanies vaccination is generally very slight: about the eighth day the infant is rather restless, the bowels are perhaps confined, the skin is hot, and the sleep is disturbed. These symptoms, however, disappear spontaneously in two or three days.

Some interesting experiments lately made by Dr. Gustav Wertheim, of Vienna, tend to show that the frequency of the pulse is permanently increased by the process of vaccination. Thus, a man aged thirty-eight, and a woman aged thirty-three, neither of whom had suffered from small-pox, were vaccinated for the first time; the pulse, in both cases, in-

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covery: in 1808, the National Vaccine Establishment was formed: in 1823, Jenner died: in 1840, a Bill passed the legislature for the extension of vaccination, and another declaring the practice of inoculation illegal: in 1853, compulsory vaccination was first established: and in 1858, it is to be hoped, that the statue to Jenner's memory—already completed—will be erected in Trafalgar-square.

creased in frequency up to the sixth day after vaccination, when it began to decline; never declining—not at least for the four months during which the observations were continued—as low as it was before the introduction of the vaccine virus. For example, before vaccination the man's pulse was on an average 66; afterwards the average was 78.

In practising vaccination, it is better to use recent lymph, which should be taken from vesicles between the fifth and ninth days, the seventh or eighth being probably the best. Three or four small punctures must be made with a sharp lancet on either arm, and the vaccine lymph inserted deep enough to come in contact with the absorbing surface of the cutis vera.

According to the Act of Parliament, passed in 1853, parents and guardians are obliged to have every infant vaccinated within, at furthest, four months from birth; unless, indeed, the child's state of health renders it necessary to postpone the operation.

With regard to re-vaccination at the period of puberty it must be recommended; for although in probably the majority of cases where vaccination has been properly performed during infancy it may prove unnecessary, yet in some instances the protection which has been afforded does certainly seem to die out, and hence requires renewal. Moreover, it is certain that re-vaccination can do no harm; while it will, doubtless, increase the patient's feeling of security.

When small-pox occurs after a child has properly taken cow-pox, as it sometimes will, the disease is much milder and shorter, is unaccompanied by secondary fever, and is less likely to lead to disfigurement or permanent impairment of the constitution; it is called *modified* small-pox. But the protection afforded by vaccination is within a fraction as great as that given by inoculation; while the former is unattended with any danger, and does not—like the latter—tend to keep alive and propagate the disease. At the Royal Military Asylum, Dr. Balfour has shown that, out of every 1,000 boys admitted protected by previous variola, 6·15, and out of every 1,000 protected by vaccination, 7·06 were attakced subsequently by small-pox: while it is very remarkable that whereas the deaths from secondary small-pox amounted to 2·05 per 1,000 of those attacked, not one fatal case occurred in those affected with modified variola.* Moreover, from records kept at the Small-Pox Hospital, Mr. Marson proves that the mortality from small-pox in persons well vaccinated, and having more than two cicatrices, was less than 1½ per cent.; in persons reputed to be vaccinated not more than 3 or 4 per cent. under favourable circumstances, and not more than 7 under unfavourable; while the mortality of the natural small-pox varied from 20 to 35 per cent.†

SECTION IV.—VARICELLA, OR CHICKEN-POX.

Varicella, or chicken-pox, is a trifling complaint almost peculiar to infants and young children. After a short incubation—probably four days—an eruption of transparent vesicles appears, the bases of which are surrounded by a slight inflammatory blush. The eruption generally commences on the shoulders and breast, affects the scalp, but generally spares the face, and is accompanied by slight pyrexia. Dr. Gregory states that when the vesicles are abundant, the body presents the appearance of having been exposed to a momentary shower of boiling water, each drop of which has produced a small blister.

There are no constitutional symptoms of any importance; the disease occurs but once to the same person; it is contagious; it runs its course in six days; and it requires no treatment beyond attention to the diet, and confinement to the house until the desiccation of the vesicles is completed.

SECTION V.—RUBEOLA, OR MEASLES.

The Measles (Cullen), Rubeola (Willan), Morbilli (Sydenham), are terms employed synonymously to designate a disease, the distinguishing characters of which are—a continued contagious fever, accompanied by an eruption, and frequently attended with inflammation of the mucous membrane of the respiratory organs.

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* *Medico-Chirurgical Transactions*, vol. xxxv., p. 403. London, 1852.

† See an interesting paper by Dr. E. C. Seaton on the Protective and Modifying Power of Vaccination in the *Journal of Public Health*. London, January, 1857.

Symptoms.—After a period of incubation, varying from ten to fourteen days, during which there is but little disturbance of the general health—perhaps a feeling of languor, with a cough—symptoms of fever with catarrhal implication begin to show themselves, followed by rigors; the conjunctivæ, Schneiderian membrane, and membrane of the fauces, larynx, trachea, and bronchi becoming affected. In a day or so there is swelling of the eyelids; eyes suffused and watery, and intolerant of light; sneezing; dry hollow cough, with hoarseness and dyspnœa; drowsiness; a tendency to delirium; great heat of skin; and frequent and hard pulse. The eruption comes out at the end of the third or beginning of the fourth day of the disease, seldom earlier, often later. It consists of small circular spots, like flea-bites, which gradually coalesce into blotches; these are of a dull dingy-red colour, present frequently a crescentic or horse-shoe shape, and are slightly raised above the surface of the skin. The rash appears first on the forehead and face, and gradually extends downwards: it begins to fade on the seventh day in the same order, and without producing that marked desquamation which is such a striking feature in scarlatina and erysipelas. The diarrhœa, which often sets in as the rash declines, is for the most part beneficial.

It is worthy of notice that the fever does not abate—though the cough often ceases—on the appearance of the eruption, as in small-pox; nor does the severity of the attack at all depend upon the quantity of the rash. The contagion of measles is strong; being most powerful during the eruptive stage, and especially during the early part of this period. Some observers have stated that rubeola is most contagious at the time of desquamation; but this was clearly disproved during an epidemic of measles which broke out in the Färoe Isles in the year 1846.

Prognosis.—This must depend upon the mildness or severity of the chest symptoms: the complications most to be feared are severe ophthalmia, laryngeal and croup affections, or bronchitis and pneumonia. In the great proportion of fatal cases, death is due to pneumonia. There were 864 deaths from measles in London during the year 1855; while in 1856 the number was increased to 1,445. Probably one case in fifteen is fatal.

Treatment.—Exposure to cold to be carefully avoided. The patient should be confined to bed, in an apartment moderately warm. Low diet, mucilaginous drinks, gentle aperients, and mild diaphoretics must be had recourse to. A draught containing one drachm of the liquor ammoniæ acetatis, ten or twenty drops of the spiritus ætheris nitrici, and half an ounce of camphor mixture, may be given to a child six years old every four or six hours. When the cough is very troublesome a little syrup of poppies should be given at bed-time. If the diarrhœa prove exhausting, one or two grains of Dover's powder will help to check it; if there be much debility, nourishing broths, and wine or cordial draughts, will be called for.

The state of the three great cavities must be carefully watched, especially towards the decline of the eruption. Should any complications arise, they must be treated according to the rules which will be laid down in speaking of each affection. After the disease has subsided, the patient should be warmly clad, and not allowed to go out of doors too early.

SECTION VI.—SCARLATINA, OR SCARLET FEVER.

Scarlatina, or Scarlet Fever, is an infectious and contagious febrile disease, characterized by an extensively-diffused bright-scarlet efflorescence of the skin, and of the mucous membrane of the fauces and tonsils, commencing about the second day of the fever, and declining about the fifth: it is often accompanied by inflammation of the throat, and sometimes of the submaxillary glands. Like measles, it is essentially a disease of childhood, but it is more to be dreaded. The average mortality from it is about one in seventeen cases in adults: probably one in twelve in children under fifteen years of age. In London, in 1854, the deaths from it were 3,439; in 1856 the number was only 1,795.

There are three varieties of this disease. Scarlatina *simplex*, in which the skin only is affected; scarlatina *anginosa*, in which both skin and throat are implicated; and scarlatina *maligna*, in which all the force of the disease seems to be expended upon the throat.

Scarlatina simplex commences—after a period of incubation, which lasts from four to six days—with slight fever, rigors, lassitude, and headache. The eruption appears on the second day; first about the neck, face, and chest, in the form of numberless red points, which, in twenty-four hours from their first appearance, cover the whole body. On the limbs, but especially about the fingers, there is a diffused, continued efflorescence; but on the trunk the rash is distributed in irregular patches. The eruption is of a bright-scarlet colour, most distinct about the loins and the flexures of the joints. The efflorescence commonly terminates by desquamation of the cuticle, which begins about the end of the fifth day on those parts where the rash first appeared. On the face and trunk the desquamation is in the form of scurf; while on the hands and feet large flakes of cuticle are detached, so that sometimes a glove or slipper of scarf-skin comes away at once.

At the same time that the efflorescence has been spreading on the surface of the body, the mucous membrane of the mouth, fauces, and nostrils has also been affected. The tongue especially puts on an appearance characteristic of scarlatina. It is at first covered with a thick white fur, through which the red elongated papillæ project; but as this fur clears away, it becomes clean and preternaturally red, and of a strawberry appearance. The affection of the mucous membrane of the mouth, &c., terminates by resolution; with the disappearance of the rash the febrile symptoms subside; and the disease terminates at the end of eight or nine days, leaving the patient very weak.

Scarlatina anginosa is ushered in with more violent symptoms than the preceding. There is headache with some delirium, more pungent heat of the skin, and marked prostration. About the second day there is stiffness of the neck, uneasiness in the throat, hoarseness, and pain on swallowing. The fauces, palate, uvula, and tonsils are red and swollen; and the inflamed surfaces are covered with an exudation of coagulable lymph. As this inflammation goes on, all the febrile symptoms increase, and the skin becomes very dry and hot. The efflorescence does not observe the same regularity as in the simple form; it does not appear so early, is delayed to the third or fourth day, comes out in scattered patches on the chest and arms, and shows a tendency to vanish the day after its appearance, and to reappear partially at uncertain times. With the fading of the eruption about the fifth or sixth day, the fever and inflammation of the throat begin to abate, although the throat often remains sore for a week or ten days after the disappearance of the rash. Occasionally this variety of scarlet fever assumes a more aggravated form; being accompanied with an acrid discharge from the nostrils and ears, deafness, and inflammation of the parotid and cervical glands —sometimes going on to suppuration.

During the progress of the disease, particular attention should be paid to the internal organs, since there is a great predisposition to inflammation of the serous and mucous membranes.

Scarlatina maligna, described by Cullen under the title of *Cynanche maligna*, differs but little in its symptoms, at first, from scarlatina anginosa. The fever, however, soon assumes a malignant or typhoid character; great cerebral disturbance being superadded to the affection of the fauces and skin. There is great irritability, restlessness, and delirium,—the delirium being sometimes violent, but usually of the low muttering kind. The tongue is dry and brown, tender and chapped; the lips, teeth, and gums are covered with sordes; and the breath is extremely fœtid. The throat is not much swollen, but appears of a dusky-red hue, while the velum, uvula, and tonsils are covered with dark incrustations, consisting of exudations of lymph; in some cases there is gangrenous inflammation of these parts, followed by sloughing. The cervical glands are often involved in the inflammation. The rash is exceedingly irregular as to the time of its appearance and duration; often coming out late, disappearing after a few hours, and being renewed several times during the progress of the disorder. It is at first of a pale hue, but soon becomes changed to a dark livid red; petechiæ also often appear upon the skin.

In many instances this malignant form of scarlet fever terminates fatally on the third or fourth day. It is always a disease of such extreme danger that only patients with vigorous constitutions survive it; great hopes may be entertained, however, if the seventh day be passed.

Sequelæ.—Children who have suffered from scarlatina are very liable to have their health permanently affected, and to become afflicted with some of the many forms of scrofula, especially strumous ulcers, ophthalmia, scrofulous enlargements of the cervical glands, diseases of the scalp, &c. But the most frequent and most serious sequel is a peculiar renal affection, with general anasarca: the former being characterized by the secretion of scanty, smoky-looking, albuminous urine; the latter by serous infiltration of the subcutaneous areolar tissue, often accompanied by dropsy of the larger serous cavities. It occurs about the twenty-second day from the commencement of the fever. Now it is curious that this scarlatinal dropsy is more frequent after a mild than after a severe attack; owing, probably, to the want of caution which is often observed in such cases during the period of desquamation. The patient gets exposed to the action of cold: the exposure arrests the functions of the skin: the scarlatinal poison which was being eliminated by the cutaneous excretion is thrown back into the circulation: the kidneys are, as it were, called upon to eliminate that material which the skin has been temporarily rendered incapable of doing: but the contaminated blood is sent to them in larger quantities than they can bear, or the morbid poison in the blood overwhelms them, and hence arises—

ACUTE DESQUAMATIVE NEPHRITIS.—This renal affection also occurs from cold, the cholera-poison, and other causes besides scarlatina; but for a description of it, as well as for an account of the treatment it requires, I must refer my readers to Chapter XIX., Section 1.

During the progress of scarlatinal dropsy—as indeed from dropsy produced by other causes—children are liable to suffer from—

ŒDEMA OF THE LUNGS.—The symptoms in the commencement are those of bronchitis; but at the end of two or three days the breathing becomes greatly hurried, dyspnœa or even orthopnœa sets in, there is violent action of the heart, and a very feeble pulse. On practising auscultation and percussion no signs will be found to account for the severity of the sufferings; for there is neither bronchial respiration, nor crepitation, nor diminished resonance. Notwithstanding, however—unless relief be given by free purging, the hot-air bath, an antimonial emetic, and frequently-repeated doses of the nitric æther—the symptoms increase, the distress becomes very great, the countenance gets livid, and the child dies. On cutting into the lungs after death, they are found loaded with reddish serum: an accumulation of fluid having taken place either in the pulmonary vesicles or in the areolar tissue surrounding them, and thus impeded the entrance of air.

Treatment.—The treatment of scarlatina yet remains to be considered. The *simple form*, says Sydenham, is "fatal only through the officiousness of the doctor." It requires no treatment beyond confinement to the house for at least two or three weeks after all symptoms of the disease have disappeared, warm clothing, spare diet, and attention to the bowels. In *scarlatina anginosa* the treatment is often much the same as that for many cases of continued fever. Cold or tepid sponging where there is great heat; perfect ventilation of the sick-room, without draughts of cold air; emetics when the tongue is much coated, and nausea and irritability of the stomach exist; shaving the scalp and the application of cold lotions where there is much delirium; great caution in the use of antiphlogistic medicines—as antimony; and a strict avoidance of bleeding, even by two or three leeches. Purgatives judiciously employed will often obviate the necessity for lowering measures of any other kind, but they must on no account be given too freely, or in too large doses. Saline medicines are grateful and cooling; or, where the pulse is feeble, effervescing draughts containing an excess of ammonia. When there are decided symptoms of depression or collapse, wine, cordial draughts of ammonia, æther, and camphor, and nourishing food, must be ordered.

In *malignant scarlet fever*, a stimulating plan of treatment, such as that so successfully pursued by Dr. Todd, myself, and others in typhus, alone offers any chance of success. The vital powers are so prostrated by the deadly force of the poison, that unless we support them by the free administration of brandy, wine, and bark, they will fail altogether. When seen early, however, the treatment may be advantageously commenced by a mild emetic (F. 23). The gangrenous ulceration of the fauces, which often complicates this form, will be also best combated by the use of stimulants and the local application of a solution of the chloride of soda: but when very severe the throat and fauces must be swabbed with a strong solution of nitrate of silver—gr. x. to ℥j. The chlorate of potass drink (F. 36) will be useful. Chlorine itself—F. 32—is used by some practitioners, who speak highly of its good effects, in even the worst cases.—Belladonna, in very minute doses, has been recommended as a prophylactic against scarlatina. In an epidemic of this disease which occurred on board Her Majesty's ships 'Agamemnon' and 'Odin,' in 1853, this remedy was freely tried, without the slightest benefit.

CHAPTER XIII.

INFANTILE FEVER.

SIMPLE, or infantile, or remittent, or more correctly—typhoid fever, occurs in children in two degrees; *i. e.*, in a mild and in a severe form.

In cases of the first, or the *mild* kind, the disease comes on very gradually; the earliest symptoms that attract attention being loss of appetite, great thirst, and mental depression, so that the child is no longer lively and cheerful. During the day, also, it is listless, indolent, and peevish; and though drowsy towards the evening, yet its nights are restless, and there is a want of sound refreshing sleep. When these indications of ill health have persisted for a few days, it is noticed that the skin is hot, at some hours of the day dry, at others covered with perspiration; the breath is offensive; the bowels are generally loose, the evacuations being unhealthy and offensive; and sometimes there is obstinate constipation. In the second week the symptoms increase; the child passes very bad nights; screams, moans, grates its teeth, and starts in its sleep; suffers much from thirst and occasionally from sickness and vomiting; and perhaps has slight delirium. There is exacerbation of the fever towards the evening, with remission as the morning approaches; occasionally there is a second though less severe exacerbation about eleven o'clock in the morning. In mild cases there is seldom any rash; if any appear, it will be at this time in the form of the rose spots —so very characteristic of typhoid fever. The skin of the lips, face, nose, and fingers becomes dry and rough, and the child is constantly picking it; and there is marked loss of flesh, with great debility. Towards the end of the second, or the beginning of the third week, the symptoms begin to abate, and day by day the child improves in health; although some time often elapses before convalescence is completely established.

In the second, or *severe* form of fever, the symptoms just enumerated commence more suddenly and are more strongly marked. There is vomiting, great drowsiness, and sometimes slight rigors; the countenance looks heavy; the mind wanders at night: the skin is very hot and dry; the pulse very frequent; and from the sixth to the tenth day a very scanty eruption of rose spots makes its appearance upon the back, thorax, or abdomen. As the disease progresses, the restlessness and delirium become aggravated; the tongue is dry, brown, and glazed; the abdomen is found tumid and tender; the respiration is accelerated, and there may be cough, with a feeling of oppression at the chest; there is generally diarrhœa; the urine is scanty and high coloured; and all the evacuations are passed unconsciously. By the end of the second week the patient is reduced to the most emaciated and helpless state; until, when apparently in the worst possible condition, slight signs of amendment show themselves. Day by day the improvement increases, and at the end of some weeks health is restored.

Typhoid fever is, I believe, contagious: relapses sometimes occur; and cerebral or pulmonary complications occasionally arise and increase the danger. It must not be confounded with the simple irritative fever which is produced by dentition, improper food, &c. The cases which terminate fatally are few in number. The mortality of one in ten in France, as given by MM. Rilliet and Barthez, is too high for this country. When fatal, the prominent *post-mortem appearances* are slight congestion of the membranes of the brain, engorgement of the lungs, softening of the spleen, enlargement of the mesenteric glands, and more particularly tumefaction and ulceration of the agminated glands or Peyer's patches situated in the ileum.

Treatment.—All fevers—whether in the adult or the very young—seem disposed to run a certain course, and to terminate in the re-establishment of health. But, as in the treatment of all disease, there are certain general objects called the *indications of cure*, which must be kept in view. In fever these indications are—1, to moderate, where necessary, the violence of arterial excitement by the antiphlogistic regimen; 2, to support the powers of the system; 3, to obviate local inflammations and congestions; and, 4, to relieve the urgent symptoms. It was well observed by Pitcairn,—"I do not like fever-curers. You may *guide* a fever; you cannot *cure* it. What would you think of a pilot who attempted to quell a storm? either position is equally absurd. In the storm you steer the ship as well as you can; and in a fever you can only employ patience and judicious measures to meet the difficulties of the case."

At first, medicine is little needed; the diet should be low; toast-water or plain water may be allowed rather freely as a drink; the use of the tepid bath every morning, or frequent sponging of the body with lukewarm water, will be beneficial; and the little patient's apartment must be kept well ventilated. The chloride of lime may be used as a disinfectant. If the abdomen becomes tender, warm linseed-meal poultices will give ease: and the unhealthy diarrhœa will be best relieved by castor oil, followed by small doses of the hydrargyrum cum cretâ and Dover's powder. When the vital powers need support, good beef-tea, chicken-broth, and wine will be necessary; or a stimulant draught (F. 58 or 59) may be ordered in the place of the wine, or, if necessary, to alternate with it. Dr. Stieglitz, of St. Petersburg, strongly recommends F. 66 where there is great depression. During convalescence the food must be nourishing, but very digestible. Change of air, especially removal to the sea-side, will prove of great advantage.

CHAPTER XIV.

INFANTILE INTERMITTENT FEVER.

The intermittent fever of infants, though arising in the same way and from the same causes as that of older children and adults, has this remarkable difference—that the paroxysms are not very regular, and that it is not accompanied by rigors. It is also a rare disease in children under five years of age.

There are three species of intermittent fever or ague from which adults suffer, viz., *Quotidian*, *Tertian*, and *Quartan ague;* of which the tertian is the most common. Children at the breast, however, seem generally to suffer from the quotidian. When the paroxysm occurs at the same hour every day, it is called quotidian ague; when every other day, tertian, though secundan would be more appropriate; and when it is absent for two whole days, and then recurs, quartan. In the first species the interval is twenty-four hours, in the second forty-eight, in the third seventy-two. The time between the commencement of one paroxysm and the beginning of the next is termed the *interval;* that between the termination of one paroxysm and the commencement of the next, the *intermission.* In quotidians the paroxysm occurs, for the most part, in the morning; in tertians, at noon; in quartans, in the afternoon. The first is most common in the spring, the second in the spring and autumn, the third in the autumn.

The *predisposing causes* of ague are debility, and the once having suffered from it. The *exciting cause* consists of certain emanations or invisible effluvia from the surface of the earth, known as malaria. It is worth remembering that malarious districts are most dangerous at night, and that this poison lies low, or, as Dr. Watson says, "loves the ground."

An ague fit is composed of three stages, the cold, hot, and sweating; the first being almost always absent in infants, the second well marked, and the third only slightly manifested. The *cold* stage, in adults, is ushered in with feelings of languor and chilliness, though the heat of the body may not be really lessened; sensations as of streams of cold water running down the back, and shivering; the teeth chatter, and the whole frame is shaken; there is exhaustion; often urgent thirst; the countenance appears anxious, the features shrunk and pale, and the eyes dull and hollow; the pulse is small; the respiration hurried and oppressed; and there is a peculiar mental irritability. The duration of this stage varies from half an hour to four hours, and is gradually succeeded by the *hot* stage, which is one of reaction. The surface of the body becomes dry and intensely hot, the temperature being raised considerably above the natural standard; the mouth is parched, there is excessive thirst, frequent full pulse, a painful sense of fulness in the head, and great restlessness, general uneasiness, and sometimes delirium. This condition continues rarely less than three or more than twelve hours; and then follows the *sweating* stage, commencing with perspiration appearing first on the forehead and breast, and gradually extending over the whole body. The pulse and breathing become natural; the headache, heat of skin, and thirst abate; the bowels and the kidneys act freely; and all the distressing symptoms are relieved, so that the patient, if the case be recent, often feels in perfect health.

The prominent symptoms of ague in infants are—the occurrence of a decided attack of fever once a-day, emaciation, debility, and enlargement of the spleen. The skin also is flabby, the gums are pale, the extremities cold—except during the hot stage, there is frequently purpura, and not uncommonly other signs of anæmia.

Treatment.—Alteratives and tonics, especially quinine, will cure this affection. When the attacks of fever have ceased to recur, the blood must be improved by steel, good diet, and pure air.

CHAPTER XV.

GENERAL DISEASES.

SECTION 1.—SCROFULA.

1. *General Observations.*—Scrofula, or struma, is a disease of the constitution manifested by certain external signs, of which swelling of the subcutaneous lymphatic glands, especially those of the neck, is the most conclusive.* Not that engorgements of the lymphatic vessels and glands constitute scrofula, or are always due to it; such enlargements often occur from temporary causes, but they are then easily recognised by their histories and symptoms. It is still doubtful whether scrofula and tuberculosis are different diseases or not; many authorities regarding them as distinct, though they allow that some unknown relation subsists between them. The question is as yet *sub judice;* for of the two most recent writers on the subject—Mr. Phillips and Mr. Ancell—the former considers that, though these affections possess a certain general similarity, yet they have no identity; while the latter † regards the disease of the blood which leads to the deposit of tubercle, and that which gives the specific character to scrofulous affections, as essentially the same.

By many authorities it is stated—though the truthfulness of the statement may be questioned—that persons possessing the strumous constitution or diathesis manifest certain peculiarities, such as a coldness of the body; a dull-white, but very delicate skin; a rounded, graceful outline of face, with a delicacy of feature, and rosy hue of the cheeks, strongly contrasting with the surrounding pallor, and often giving to the countenance, especially in women, a characteristic beauty; hair which is usually blond or auburn; and eyes large, blue, projecting, and humid, with the pupils habitually dilated. Moreover, it is said that such persons are remarkable for the development of the head, of the alæ nasi, and of the upper lip: for the large development of the lower jaw, and the milk-white teeth, which early become carious; that the breath is habitually sour and fœtid, the neck long and rounded, the chest narrow and flat, the shoulders high, the abdomen large and prominent, the limbs thin, and the flesh soft and flabby. It is commonly believed that in youth all scrofulous persons manifest great cerebral activity; that they are impatient and passionate; that their intellectual system is largely developed; and that although many have more imagination than judgment, yet some occasionally are capable of sustained mental exertion. There are very few cases, however, where the actual appearances will correspond with this description; the most constant peculiarities are the paleness and coldness of the body, and the tumidity of the abdomen.

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* See the Treatise of Mr. Benjamin Phillips, on *Scrofula*, p. 26. London, 1846.

† *A Treatise on Tuberculosis.* London, 1852.

As regards *the nature of the scrofulous deposit*, I cannot do better than give the opinion of Hecht, who says:—"If we take a large lymphatic gland, altered in structure and converted into a mass of scrofulous matter, the whole mass seems homogeneous, and of the same yellowish or dirty-white colour; towards the centre the mass is softer, and of a creamy, pulpy appearance. The softened pulp turns litmus-paper green; acted upon by boiling water, or acids, it coagulates, presenting no globule either of fibrin or of pus, and is apparently only a mass of coagulated albumen, with an excess of alkaline salts. But when inflammation is excited by its presence, pus may be found mixed with the matter." He then goes on to show, that, in addition to albumen, it consists of gelatine, fibrin, and probably a little stearine.

2. *Causes of Scrofula.*—The causes which have been most frequently assigned are hereditary influence, syphilis, bad air, bad food, and a cold and damp atmosphere. As regards hereditary influence, it may be noticed that, if by this is meant that there is a certain poison or strumous virus transmitted from parents to children, the position is totally untenable; but, on the other hand, if it be only understood that the children of scrofulous parents are more liable to have the disease developed in them on the application of the exciting causes than the children of healthy parents, as was

the opinion of John Hunter, the position is most probably true. That it is not contagious is certain. Many authors have imagined that a syphilitic taint in either parent will induce scrofula in their offspring; while some have even maintained that this disease is only a degenerated species of syphilis. There seems, however, to be no truth in either of these suppositions; scrofula and syphilis being very different diseases, quite independent the one of the other. Neither does the development of struma appear to be influenced by climate or temperature. But it is to diseased nutrition, however brought about, that we may refer the production of scrofula; and it is to insufficient, or innutritious, or improper food, that the vast majority of cases of diseased nutrition are due, though it may also arise from breathing a vitiated atmosphere, or from want of cleanliness and healthy exercise.*

3. *Prevention.*—There are four points to be attended to in the prevention of scrofula. 1. To obtain well-assorted marriages — the marriages of parties in sound health and vigour. 2. Where this disease exists in the parents, or in either of them, great care should be taken to maintain the health of the mother during the period of utero-gestation. She should wear warm clothing, should take regular exercise in the open air, avoid heated rooms and late hours, and have a plain nourishing diet. 3. On the birth of the child, every means should be taken to strengthen its general health, and to counteract the hereditary influence by attention to the food, air, clothing, &c. If the mother be free from the strumous habit she may suckle her offspring, but otherwise a young and healthy nurse should do so. At the age of nine or

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* "In all parts of Europe," says Dr. Baly, physician to the Millbank Penitentiary, "the proportion of deaths has been much greater among criminals in prison, than amongst persons of a corresponding class out of prison; and the increased mortality is due to various forms of scrofula, and especially tubercular phthisis. The causes which contribute to this result are cold, poorness of diet, deficient ventilation, want of sufficient bodily exercise, and dejection of mind. In a great number of cases of phthisis in this prison, apparently hopeless, the disease was immediately checked on the release of the prisoners, many of whom entirely recovered." Quoted by Dr. William Addison.—*On Healthy and Diseased Structure*, p. 48. London, 1849.

ten months the child should be weaned, and fed on cow's milk, a small quantity of light nutritious vegetables, and a little broth. Dr. Paris strongly recommends milk impregnated with the fat of mutton suet, which he orders to be prepared by enclosing the suet in a muslin bag, and then simmering it with the milk. The child should be warmly clothed, should live in apartments where the ventilation is good, should have plenty of exercise in the open air, and once daily should have a cold sea-water bath, or a cold bath with bay-salt dissolved in it. 4. In cases where there is no hereditary predisposition, ill-ventilated, damp houses should be avoided; as well as localities generally regarded as unhealthy.

4. *Curative Treatment.* — An account of the superstitious practices—touch of the dead felon's hand, the drinking out of human skulls, the various pilgrimages, and the Royal touch—formerly performed for the cure of scrofula, would form a curious chapter in the history of human credulity; but as it would be out of place in these pages, I must refer my readers to the writings of Lugol, Phillips, Tyler Smith, Glover, &c.

The agents which are for the most part employed, and which are most deserving of attention, are mercury, iodine, cod-liver oil, the muriates of baryta and lime, &c. *Mercury*, in all its forms, has been administered in cases of scrofula. It does not, however, possess any peculiar property of removing this disease; and when administered so as to lower the general powers, whether by profuse purging or by salivation, does much mischief. When combined with other medicines as an alterative, it is often beneficial; especially the bichloride, given in minute doses—such as the $\frac{1}{30}$th or $\frac{1}{20}$th of a grain twice daily, with the extract and decoction of sarsaparilla (F. 20, 21, 33), &c. *Iodine* is by some regarded as little less than a specific, and it certainly is a remedy of great value. The iodide of potassium in moderate doses—F. 38—is the best and most extensively used preparation of this agent; or the liquor potassii iodidi compositus of the London Pharmacopœia, in doses of half a drachm to two or three drachms—according to the child's age—may be employed. Applied externally, as an ointment (F. 90) or as a paint (F. 89), to enlarged glands, &c., it is very useful. Lugol also recommends the application of iodine and its compounds in the form of baths (F. 91). Associated with iron or quinine or zinc, its efficacy is in some instances increased (F. 40). *Cod-liver oil* (oleum morrhuæ) will often do good in improving the nutrition of strumous patients. It requires to be given for some time, commencing with half a drachm thrice daily, up to half an ounce or more. The *muriates of baryta and lime* have been much extolled, but on insufficient grounds; they are rarely or never used. The whole class of *tonic medicines* have been recommended; and there is no doubt but that quinine, steel, and the mineral acids will occasionally be found very useful.

SECTION II.—TUBERCULOSIS.

Tubercle, or tuberculous matter, is the specific product of a peculiar constitutional disease. It is deposited in a fluid state from the capillaries, just as lymph is; the deposit coagulating, and forming a foreign body. Hence it exists in isolable masses, or is infiltrated into the tissues of many different organs; being most frequently found in the lungs, constituting pulmonary tuberculosis, or tubercular disease of the lungs, or phthisis, or consumption—these terms being synonymous. In the child, however, much more frequently than in the adult, tuberculosis exists without affecting the lungs. Thus in 312 children in whom MM. Rilliet and Barthez found a deposit of tubercle in one or more of the viscera, in 47 the lungs were healthy; while in 123 similar instances in the adult, M. Louis only found one such exception. The bronchial glands — especially those about the bifurcation of the trachea—are usually the seat of an abundant tubercular deposit in the young, producing symptoms as important as the deposit in the pulmonary tissue; but in the adult this is by no means the case, and even when it occurs, the disease of the glands is only of secondary importance compared with that of the lungs. The morbid condition of system which gives rise to this production, wherever it may be deposited, is now usually known as tuberculosis, or tubercular disease; the tendency to it is often hereditary. According to Rokitansky, pulmonary tubercles are found in two varieties, or in forms intermediate between them; viz., as the grey or miliary, and the yellow tubercles. By some it is supposed that these two varieties merely represent two stages of the same disease. Rokitansky maintains, however, that they are always different substances; and that although they often coexist in the same lung, yet that they never become transformed the one into the other. Be this as it may, it is certain that the minute structures of both are essentially similar. Of course there has been a vast amount of speculation as to the mode of formation and nature of tubercle. The best explanation, and that to which many authorities—as Lebert, Ancell, and Dr. John Hughes Bennett—subscribe, is that it consists of an exudation of the liquor sanguinis, presenting marked differences from the simple or inflammatory exudation on the one hand, and the cancerous exudation on the other. As the blood is of course dependent for its constitution on the results of the primary digestion in the alimentary canal, on the secondary digestion in the tissues, and on the healthy performance of the function of respiration, so we must agree with Dr. Bennett that the causes of the tubercular exudation are to be sought in the circumstances which operate on, or influence, those results:—"The successive changes which occur for the purposes of assimilation in the healthy economy may be shortly enumerated as follows:—1st. Introduction into the stomach, and alimentary canal of organic matter. 2nd. Its transformation by the process of digestion into albuminous and oily compounds: this process is chemical. 3rd. The imbibition of these through the mucous membrane in a fluid state, and their union in the termini of the villi and lacteals to form elementary molecules: this process is physical. 4th. The transformation of these, first, into chyle corpuscles, and, secondly, into those of the blood, through the agency of the lymphatic glandular system: which is a vital process. It is from this fluid, still further elaborated in numerous ways, that the nutritive materials of the tissues are derived; so that it must be evident, if the first steps of the process are imperfectly performed, the subsequent ones must also be interfered with. Hence we can readily comprehend how an improper quantity or quality of food, by diminishing the number of the elementary nutritive molecules, must impede nutrition."*

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* *On the Pathology and Treatment of Pulmonary Tuberculosis*, p. 27. By John Hughes Bennett, M.D., &c. Edinburgh, 1853.

From the chemical analysis of tubercle, it would appear to consist of animal matter—principally albumen, and certain earthy salts—chiefly the insoluble phosphate and carbonate of lime, and the soluble salts of soda.

In pulmonary phthisis the tubercular deposit takes place in the areolar tissue between the air-cells, in the air-cells themselves, and in the smaller bronchial tubes communicating with them; and wherever a speck of this matter is deposited from the blood, it continues to increase by constant addition. In its hard state it is called crude tubercle; and it is in this condition that it is generally found in children dying of pulmonary consumption, cavities being comparatively rarely formed in the lungs in early life. After a time, inflammation arises in the pulmonary substance surrounding the deposit; suppuration occurs; the tubercular matter softens and breaks down, and at length is gradually expelled through the bronchi, trachea, and mouth, leaving cavities or excavations behind, of various sizes. Sometimes these cavities close and heal; more frequently tubercular matter continues to be deposited on their sides, and in other parts of the lungs, until these organs become diseased to an extent incompatible with the continuance of life.

For the further consideration of this subject see the Sections on *Phthisis*, *Acute Hydrocephalus*, *Tabes Mesenterica*, *&c.*

SECTION III.—SYPHILIS.

Various hypotheses have been put forward to account for the occurrence of secondary or constitutional syphilis in the infant. Thus, it has been thought that it might arise from the contact of the infant's body with a sore on the mother's genitals at the time of birth. Others attribute it, with a greater show of reason, to sucking the breast of a syphilitic nurse; though if such can be the cause, it is certainly a very unusual one. But the theories most deserving of credit are these: either, that the mother during pregnancy suffers from primary or secondary syphilis, and that her blood—although there is no real admixture of the maternal and fœtal bloods—infects the infant's blood: or, that the taint is derived entirely from the father; the mother always having been, and continuing healthy, unless she becomes infected by the diseased fœtus.

Symptoms.—For the first two or three weeks after birth, the infant may be apparently healthy; when, slowly, symptoms of coryza set in, with a peculiar snuffling during breathing, dry cough, slight difficulty in sucking, and dryness of the lips and mouth. The skin soon becomes dry, the voice shrill and hoarse—it has been compared to the squeaking of a penny trumpet, the mucous membrane of the mouth and throat becomes affected with superficial ulcerations, and an erythematous blush appears upon the feet and hands. Should the disease be unchecked, large patches of the skin assume a light-brown colour; the epidermis exfoliates; the parts around the mouth, nostrils, buttocks, anus, and flexures of the joints become copper-coloured, fissured, and excoriated; the eyes get weak, and the margins of the eyelids sore; the hair may fall off; the child becomes irritable, wastes rapidly, and daily grows weaker; and it often suffers from sickness, and diarrhœa. In some fatal cases, collections of pus have been found—after death—in the thymus gland.

Prognosis.—The duration of the disease varies. Death may occur at an early period; but under efficient treatment, recovery, or apparent recovery, usually takes place speedily.

Treatment.—Mercury, in some form or other, is the remedy for this affection. It has been recommended to cure the infant through the medium of the mother, by getting her system under the influence of mercury; but this practice is too uncertain to be depended upon, and is unjustifiable if the parent have no symptoms demanding a mercurial course. The best plan is either to administer the hydrargyrum cum cretâ, or to apply the mercurial ointment as recommended by Sir Benjamin Brodie. To an infant six weeks old, one grain of grey powder with two or three of the compound chalk powder, may be given twice or thrice in the day until all the symptoms cease: or should this medicine gripe and purge, or be deemed inefficient, I would use the mercurial ointment, by applying a drachm or a little more on the end of a small flannel roller, and then wind this round the infant's knee, repeating the application daily. The movements of the child produce the necessary friction; and the cuticle being thin, the mercury easily enters the system. "Very few of those children ultimately recover in whom the mercury has been given internally; but I have not seen a single case in which the other method of treatment—mercurial inunction—has failed."*

The local treatment for the excoriations consists in attention to cleanliness, and the application of the benzoated oxide of zinc ointment—F. 84; or a cerate composed of one drachm of the unguentum hydrargyri nitratis to one ounce of lard.

SECTION IV.—BRONCHOCELE AND CRETINISM.

1. GOÎTRE, OR BRONCHOCELE.—This affection—called *Goître* by the Swiss, and *Derbyshire Neck* by the English, from its being endemical in some parts of Derbyshire—consists of a chronic enlargement of the thyroid gland; the increase in size being due to distension of the cells of the gland owing to their excessive secreting action. The whole gland may be swollen or the centre only, or either side: according to Alibert, the right lobe is more frequently affected than the left. The projecting, elastic swelling is unaccompanied by pain; and usually causes but little inconvenience beyond the unsightly deformity which it produces. Sometimes, however, distressing symptoms are induced by the pressure of the enlarged gland on the surrounding parts; and respiration and deglutition may be rendered painful and difficult by the compression of the trachea and œsophagus. It is much more common in women than in men, almost in the proportion indeed of twelve to one: it may occur during the early epochs of life, but it is especially about the time of commencing puberty that it is seen in this country. Wherever goître prevails, popular opinion regards the water used for drinking as its cause: and we find that in Styria there are certain wells from which the inhabitants fear to drink; or when by chance they have drunk from them they go to an antidotal well—the water of which contains iodine—to counteract the bad effects.†

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* *Lectures on Pathology and Surgery*, p. 245. By Sir Benjamin Brodie. London, 1846.

† Kohl's *Travels in Austria*.

There is probably good ground for these popular superstitions.

Treatment.—The first point in the treatment of bronchocele is, if possible, the removal of the patient from the infected locality: and then attention to regimen. As regards therapeutic agents the introduction of iodine, by Dr. Coindet, of Geneva, has superseded all other remedies. The liquor potassii iodidi compositus of the Phar. Lond. should be ordered in doses of ʒss. to ℥j., according to the age. The unguentum iodinii compositum, or the pigmentum iodinii—F. 89—should be applied locally about once or twice a-week.

When these means fail, surgeons have attempted to give relief by one of three operations. Thus some cases are recorded as having been cured by the introduction of setons into the diseased gland; while, in other instances, the operation of tying the thyroid arteries has been practised; and these means having failed, attempts have been made to extirpate the gland. To a physician, however, the last operation seems unjustifiable.

2. Cretinism is a strange disease; being a sort of idiotcy accompanied by bodily deformity, and having a close but ill-understood connection with goître. Most cretins are goîtrous; but bronchocele may prevail—as we see it in this and many other countries—without cretinism.

The cretin is found principally in the valleys of the Alps, the Pyrenees, and the Himalaya mountains: regions where the soil is damp; the air humid and foul, from being shut in on all sides by high mountains; and the inhabitants dirty, poor, and often almost destitute of the common necessaries of life. His stature is diminutive; his head of great size; countenance vacant, and void of intelligence; tongue large; flesh flaccid, brown, and dirty; figure squat and bloated; abdomen sunken and pendulous; legs short and curved. Idiotism of the lowest grade is frequently his lot; sometimes he is dumb, or deaf and dumb, or blind; in all cases his disposition is sluggish and unexcitable; he is malicious, obstinate, and cruel; his appetite is gross and voracious; his sensual propensities most disgusting and brutal; and, in short, if neglected he more resembles an animal than a human being. I say, if neglected; for thanks to Dr. Guggenbühl—the humane and talented director of the establishment at Abendberg, near Interlachen, for the treatment of cretins—it has been proved that even for these apparently hopelessly wretched beings much may be done by incessant supervision; pure mountain air; plenty of exercise; a simple nourishing diet into which milk largely enters; the occasional use of such medicines as cod-liver oil, carbonate of iron, phosphate of lime, valerianate of zinc, &c.; warm clothing, and attention to the functions of the skin; moral control, and judicious mental training.

Cretinism is not always congenital. Kohl in his travels states that there is a peculiar dulness of the eye by which experienced people can tell whether or not the child is to be idiotic. But sometimes there is no appearance whatever of this disease until even as late as eight years of age; and then the countenance becomes stupid and heavy, the gait awkward, the legs bend, and the memory and intellect seem to vanish. Cretins often live to a great age. They are kindly treated by their neighbours; and in many villages are superstitiously regarded as sacred beings.

CHAPTER XVI.

DISEASES OF THE NERVOUS SYSTEM.

SECTION I.—INTRODUCTION.

The extreme frequency of diseases of the nervous system during the early periods of life, the alarming symptoms they give rise to, and their great fatality, invest these disorders with an interest and importance very remarkable. I have already adverted to the cause of these affections; and shown that it is in a large measure due to the rapid development of the brain in early childhood, as well as to the great activity of the circulation, and the readiness with which this is disturbed. Hence we may at once proceed to a short review of the *symptoms* they produce.

An infant suffering from acute disease of the brain, lies sad and listless in its nurse's arms; its countenance is anxious and haggard; its face is frequently flushed and turned away from the light; it is constantly moaning or uttering a piercing cry; its skin is hot; its pulse frequent and irregular; and it is constantly putting its hand to its head, or even striking at it. On examining the scalp it is found heated, with the veins prominent and full; the fontanelle is tense and the pulsations of the brain can be felt through it; the eye is half closed, the pupil is contracted, and often one iris acts more readily to the influence of light than the other. On inquiry it will be ascertained that there is nausea and vomiting, the efforts at vomiting continuing even when the stomach is empty; there is commonly constipation; there are attacks of difficult breathing, the respirations are irregular, and frequently there is a hacking cough; and above all, at the end of a few days, there are attacks of convulsions, which cause great alarm to the parents, and often endanger the life of the infant. This last symptom is so important, and it is so necessary to understand it in all its bearings, that it demands consideration in a separate section.

SECTION II.—CONVULSIONS.

From the time of birth until the end of the seventh or eighth year, convulsions are of rather frequent occurrence, inasmuch as they are produced by a variety of circumstances: but they are most common during infancy, since this is not only the most excitable period of existence, but it is also exposed to its own peculiar sources of irritation. The attacks very commonly—when not symptomatic of severe cerebral disease—pass off without any bad result; but when they recur frequently they are very likely to weaken the intellect, and to impair the general health; and in some instances they prove the immediate cause of death.

A few days after birth, the young child is apt to suffer from slight convulsive movements, to which nurses give the name of "*inward fits.*" The baby lies as though asleep, rolls its eyes about, moans gently, breathes with a little difficulty, and has twitchings of the muscles of the face: sometimes there is a livid ring round the mouth. This condition arises from flatulence and indigestion; and is readily relieved by gentle friction over the abdomen, and the administration of two or three drops of the aromatic spirits of ammonia, with the same quantity of the compound spirits of æther.

Hiccup is a form of convulsive action to which children are liable: it may be merely symptomatic of indigestion; or it may be a sign of great danger—as of displacement of the viscera in ruptures, injury to a vital organ, or mortification of any internal part; or it may prove the harbinger of approaching dissolution in the course of acute disease. When it exists in a dangerous and distressing degree from simple gastric or intestinal derangement—attention to diet, a mild antacid purgative, or a few doses of a sedative and antispasmodic mixture—F. 54, 55, &c.—will generally suffice to cure it.

Symptoms of Convulsions.—In slight cases the symptoms are merely such as I have just described as inward fits: but generally they are much more severe. Thus, when an attack comes on, the body becomes stiff and immoveable; the muscles of the face twitch, and the lips are drawn in all directions; the integuments of the head and face become red and then livid; the eyes start, the pupils are contracted or dilated, and insensible to light; the respiration is irregular and laborious; the pulse is very frequent and small; the hands are generally firmly clenched, and the thumbs turned inwards; and the contents of the bladder and rectum are voided involuntarily. At the end of one or more minutes the convulsions diminish for a few moments; when they either recur or altogether cease. In the latter case, the limbs and features become relaxed, and the natural appearance returns; the blood becomes properly oxygenated, and the lips and face assume their healthy hue; the child looks frightened and cries; and then either falls into a sound sleep during which it becomes bathed with perspiration, or—in unfavourable cases—sinks into a state of complete coma and perhaps dies. Sometimes only one side of the body is convulsed; or only one limb; or merely the muscles of the face are affected. In all cases the muscular actions are rarely equal on the two sides of the mesial plane; and therefore the eyes, countenance, and general frame appear greatly distorted and make the aspect of the little patient perfectly frightful. The more feeble the attack, the longer its duration; sometimes the convulsive phenomena are almost continuous for several hours; occasionally they cease for three or four hours and then return, so that there may be three or four paroxysms during the day.

Causes.—Anything which over-excites the nervous system, or which interferes with the due performance of the functions of the nervous centres, is likely to induce a fit of convulsions. Hence the fits may arise from structural disease of the brain, as tubercle, phrenitis, apoplexy, &c.; from an insufficient supply of blood to the brain, as in weak, badly-nourished children; from a supply of impure blood, as is seen sometimes during the course of the eruptive fevers, or in the progress of renal disease; from distant irritation affecting the brain, such as arises from the pressure of a tooth upon the inflamed gum during dentition, or from intestinal worms, or the passage of a renal calculus, or even simple indigestion; from general irritation produced by exposure to a cold and damp atmosphere; and lastly they may be produced by fright, and by causes which we cannot discover. Moreover it may be noticed that all such circumstances as would give rise to delirium in the adult, will probably induce convulsions in the infant.

Mr. North observes, that the children of parents who marry at too early or at too advanced an age are more susceptible of convulsions, than the progeny of those persons who marry in the prime of life. Hereditary predisposition has been also observed: thus Boerhaave states that all the children of an epileptic man died of some convulsive affection.

Treatment.—This will of course vary according to the circumstances of each case; but the broad principles of treatment are as follows:—During the fit it will be advisable to avoid all unnecessary interference; it being generally sufficient to loosen the clothing about the neck, chest, and waist, to raise the head, to sprinkle the face with water, and to admit plenty of fresh air. Subsequently the warm bath may be of signal service, cold being at the same time applied to the head: or a gentle douche of cold water over the occiput may be beneficial: or a bladder containing pounded ice may be laid upon the top and back part of the head. When the bowels are confined, gentle antacid purgatives will be needed; when there is much flatulence, carminatives; when the stomach contains undigested food, emetics; when the irritation is due to dentition, and the tense gum appears to offer an obstacle to the passage of the tooth, lancing the gums; when there is restlessness, sedatives—especially the hydrocyanic acid, with a few drops of tincture of hyoscyamus; and when the blood is watery and deficient in red globules, ferruginous tonics. In one instance in which all the ordinary means of treatment failed to prevent the recurrence of convulsions—indeed the fits became more and more violent—Dr. Simpson had recourse to chloroform. The child—only one month old—inhaled the vapour with so much advantage, that at last it was kept more or less under its influence for twenty-four continuous hours: at the end of which time all medication was discontinued, and there was no subsequent recurrence whatever of the convulsions.*

The special forms of convulsions, such as epilepsy, eclampsia nutans, &c., will be considered in succeeding sections; while the subsequent treatment of all cases must, of course, be modified according to the nature of the exciting cause.

SECTION III.—CONGESTION OF THE BRAIN.

The consequences which may result from the vessels of the brain becoming overloaded during childhood are so important, that the practitioner should be constantly on his guard to prevent the occurrence of this condition: a condition which often comes on in the course of diseases of distant parts, and which gives rise to most troublesome complications. When the cerebral vessels become loaded from an increased flow of blood to the brain, it is termed *active* congestion; when from some cause impeding the return of blood from the head, *passive* congestion.

1. ACTIVE CEREBRAL CONGESTION, may result from any cause which disturbs the circulation; as the poison of either of the eruptive fevers, the irritation of dentition, exposure to the sun's rays, &c.

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* *Edinburgh Monthly Journal of Medical Science*, p. 89. January, 1852.

The *symptoms* which it gives rise to are general uneasiness, restlessness, and irritability; disturbed sleep, from which the child awakes with a start; great heat of the head, and pain which is increased by noise or any movement; tension and prominence of the anterior fontanelle; general feverishness; vomiting; and frequently a constipated state of the bowels. At the end of a few days—on the appearance of the rash in one of the eruptive fevers, or on the tooth having cut its way through the gum in dentition—the disturbance ceases, and the head symptoms pass away; or in graver cases, indications of the mischief induced by the congestion begin to appear, and we have to combat those formidable maladies which result from hæmorrhage, or from effusion of serum, or from acute hydrocephalus.

The *treatment* will have to be varied, according to the circumstances under which the congestion appears. In some few cases, perhaps, where the child is strong, and the symptoms very violent, it may be deemed necessary to resort to abstraction of blood; and the practitioner may feel rather strongly that leeches should be applied behind the ears, or over the scalp. But I believe that it will very rarely be requisite to bleed the little patient, if cold be properly applied to the head: and the best way of doing this, is to place a mixture of pounded ice and salt in two bladders, one of which is to be placed under the head, and the other laid against it or held upon it, by the nurse. If in spite of this, the symptoms increase in severity, cold affusion must be employed: the child being laid upon the nurse's lap with its face downwards, while cold water is poured upon the head from a little height, in a gentle continuous stream, for about five minutes —or less if the vital energies become depressed. In all cases, active purgatives—F. 13, 14, or 15—to clear out the intestinal canal must be prescribed: when the stomach is overloaded, emetics—F. 23, 24—are to be ordered; and the child is to be kept quiet and free from all excitement, in a cool darkened apartment.

2. Passive Cerebral Congestion often occurs during the paroxysms of hooping-cough, or of laryngismus stridulus; in some diseases of the abdominal viscera, as hypertrophy of the

spleen or liver; and in children dying from exhaustion, in whom the vital powers are too feeble to propel the blood.

The *symptoms* indicating this condition, are puffiness and general lividity of the face and lips, anxiety of countenance, pain in the head, coldness of the extremities, and weakness of the pulse: there are frequently diarrhœa, sickness, and a disinclination for all kinds of nourishment. The child may die during a paroxysm of coughing, or it may gradually sink into a state of coma. *On examining the brain after death*, its membranes will be found gorged with fluid black blood, the choroid plexuses will be seen to be highly congested, and the surface of any section of the brain will present numerous bloody points.

The *treatment* must consist in the use of antispasmodics—especially æther and hydrocyanic acid, F. 57—to relieve the convulsive cough: attention to the state of the secretions and of the bowels, healthy action being induced when necessary by alteratives—F. 9, or 10: the employment of the warm bath, or of the hot salt-water bath, while cold is applied to the head: and the administration of stimulants and tonics, particularly some preparation of cinchona with ammonia and chloric æther—F. 58, 60, &c. At the same time, the body is to be warmly clad while the head is kept cool; nourishing food, especially milk and beef-tea, is to be allowed; and the child is to be kindly nursed, and its irritability gently soothed.

SECTION IV.—APOPLEXY.

Two forms of apoplexy are usually described as occurring during childhood: one of which is designated *cerebral* apoplexy, since the blood is effused into the substance of the brain; while the other is known as *meningeal* apoplexy, inasmuch as the hæmorrhage takes place between the dura mater and cranium, or into the cavity of the arachnoid membrane, or beneath the arachnoid into the meshes of the pia mater. Both varieties are rather rare, the cerebral form being the least common. Moreover, in the greater number of instances of meningeal apoplexy, the effusion is found in the cavity of the arachnoid rather than in either of the other situations.

Symptoms.—The symptoms of *cerebral apoplexy* are much the same in the child as in the adult: there is an arrest of volition and sensation taking place suddenly, collapse with coldness of the surface, partial convulsions, unequal action of the pupils, slow and frequently stertorous breathing, and a small slow pulse. Dr. Richard Quain has reported an interesting example, occurring in a boy aged nine years, which was characterized by coma, convulsions, paralysis, and death in seven hours from the time of seizure—previous to which he was in the enjoyment of good health: after death, a large clot of blood was found in the right hemisphere of the brain, and the left ventricle of the heart was much hypertrophied.* Billard also mentions the case of an infant only three days old and apparently quite healthy, who suddenly presented the ordinary symptoms of well-marked apoplexy, and died: a clot of blood was found in the substance of the left hemisphere of the brain, immediately outside the corpus striatum.†

The distinction between cerebral and meningeal apoplexy was first pointed out by Serres; who believed that whereas the former was always accompanied by paralysis, the latter did not produce this result. In some cases of *meningeal apoplexy*, occurring in infants at the breast, M. Legendre says, that after one or two vomitings, and in some instances without precursory vomiting, the children were seized with fever and with some convulsive movements—commonly of the eyes, producing strabismus; the appetite was lost, and the thirst considerable; the evacuations were natural, or readily produced. Soon a permanent contraction of the feet and hands was observed, which was quickly followed by tonic or clonic convulsions: during which, sensibility and consciousness were abolished, and the face—always injected—assumed a deeper tint. In the interval of these attacks, there was drowsiness, which gradually became more marked; but the fever continued during the whole course of the disease, and became stronger in proportion as the fatal termination approached. Then the convulsions, separated at first by longer or shorter intervals, grew more and more frequent; until in the last moments they became almost continuous.

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* *London Journal of Medicine.* Vol. i., p. 28. London, 1849.

† *Traité des Maladies des Enfans, &c.,* p. 600. Paris, 1828.

The *duration* of the symptoms in all cases of apoplexy is very irregular, varying from a few hours to many days: they may end in permanent hemiplegia or paraplegia, or in death, or in complete recovery. When the hæmorrhage is considerable a fatal termination will be the result.

Treatment.—I can say but little upon this head: for in the first place I have never seen a case of apoplexy in the young child; and secondly, the symptoms are so obscure—especially in the meningeal form—that it is to be feared a correct diagnosis will seldom be formed sufficiently early to be of much value. But, it may be readily imagined, that the best rule to follow is that laid down by Cullen for the relief of apoplexy in the adult; viz., *to obviate the tendency to death.* If this tendency be towards death by coma, if the pulse be full and hard, if the face be flushed and turgid, and especially if the external vessels of the head and neck are visibly distended, then active purgative enemata, ice to the head, the application of sinapisms to the lower extremities, and perhaps bloodletting, will be called for. On the contrary, when —as is the case in the majority of instances—the patient appears to be dying from the mischief which has been done and the general shock to the system, when the pulse is feeble or almost imperceptible, and the skin cold and clammy, then antiphlogistic measures of any kind will only insure a speedily fatal termination; and we can only endeavour to maintain life by the use of warmth to the feet and trunk, sinapisms to the chest, and by the cautious administration of wine.

SECTION V.—ACUTE HYDROCEPHALUS.

Acute inflammation of the brain is a very common disease of early life—of children under five years of age. It rarely occurs, however, in children previously healthy; when it does so, it may be regarded as simple phrenitis or encephalitis, as will be shown in the following section. When it is the result —as it frequently is—of tubercular deposit in the brain or its membranes, when it occurs, in fact, in scrofulous or tuberculous children, it is then known as acute hydrocephalus; a term evidently badly chosen, since it refers only to one of the results of the disease, not to the disease itself. But so that the physician understands the nature of this affection it does not much matter whether he speaks of it as acute hydrocephalus, or as tubercular meningitis, or as tubercular encephalitis.

Symptoms.—The symptoms of acute hydrocephalus are liable to great variety and uncertainty. For convenience they may be arbitrarily considered as exhibiting three stages. The *first* or *premonitory stage* comes on slowly with indications of declining health, and wasting of the flesh. Perhaps a troublesome cough alone attracts attention; until there appear signs of cerebral congestion, together with general fever, the latter presenting exacerbations and remissions at irregular periods. The skin is then found harsh and hot; the appetite is capricious—sometimes bad, sometimes voracious; there is considerable thirst; the tongue is furred; the breath is offensive; there is often nausea and vomiting; and the bowels are disordered—generally constipated, and the evacuations are unhealthy and deficient in bile. If the child is old enough to run alone, it soon gets fatigued; it has frequent attacks of giddiness; and sometimes in walking it seems to drag one leg. Although drowsy, yet it is restless; it sleeps badly, moans, or grinds its teeth, screams, and awakes suddenly in alarm, without any apparent cause.

At the end of four or five days after the foregoing symptoms have become thoroughly established, the disease, if unchecked, passes into the *second stage;* when its nature becomes very apparent and its cure almost, if not quite, hopeless. The child wishes to remain quiet in bed; its countenance is expressive of anxiety and suffering; its eyes are closed, and eyebrows knit; and it is annoyed by light and suffers much from the slightest noise. If old enough to reply to questions, it complains of distressing headache, weariness, and sleepiness; crying out frequently, "Oh! my head, oh! my head." As this stage advances, the pulse—which has hitherto been rapid—becomes diminished in frequency, often falling in a few hours from 120 to 80; the slightest exertion, however, accelerates it. The symptoms increase in severity at night; and the mind wanders, or there is noisy delirium. Stupor and heaviness now come on; the little patient lies on his back almost in a state of insensibility, perhaps picking, with tremulous fingers, his nose and lips; convulsions frequently occur, and sometimes paralysis; while, at the same time, the urine and fæces are passed unconsciously.

The transition to the *third stage*, at the end of a week or two, is sometimes effected very gradually by the drowsiness passing into profound coma, from which it is impossible to rouse the child. In other instances the child becomes comatose quite suddenly; and immediately afterwards is attacked with convulsions, which often put an end to the painful scene. Occasionally, however, death does not occur until the lapse of several days: and not perhaps until there have been delusive appearances of improvement. This "lightening before death" does not long continue. The little patient again suffers from dyspnœa, difficult deglutition, cold clammy sweats, convulsions, and coma; until it sinks emaciated and completely exhausted, having struggled and fought the battle to the last.

Diagnosis.—Great care must be taken not to confound this inflammatory disease with a peculiar affection of the brain which is induced by loss of blood or other debilitating influences; and which, as it gives rise to symptoms often bearing a remarkable resemblance to those betokening acute hydrocephalus, has been termed by Dr. Marshall Hall, HYDROCEPHALOID DISEASE.* The result of this error is well described by Dr. Gooch:—"Two patients complain occasionally of dimness of sight, swimming of the head, singing in the ears, and observe that if they turn the head on one side to look at an object they feel as if they should fall; but the one is plump, florid, and has a full pulse; the other is pale and thin, has cold hands and feet, and a pulse small and feeble. One practitioner bleeds them both; the other bleeds the one, but does all he can to give blood to the other. The latter cures both his patients; the former cures the one but ruins the health of the other; but such is the nature of the human mind, that the cases *for* a preconceived opinion are retained easier than those *against* it. He remembers his good deed, forgets the other, or calls the case 'anomalous;' and marches on, without the slightest doubt that bleeding is the universal and sovereign remedy for dimness of sight, swimming of the head, and singing in the ears, save and except only in 'anomalous' cases."—But with caution the mistake can hardly occur; for in the hydrocephaloid affection there are not only prominent signs of delicate health, and extreme languor, but an absence of all active febrile symptoms. Nevertheless, it must not be forgotten that to bleed, purge, or lower such cases, or even to withhold from them cordials and proper nourishment, is to sentence them to death.

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* *Diseases and Derangements of the Nervous System*, sect. iii., chap. v. London, 1841. Refer also to Dr. Gooch's paper, *On some Symptoms in Children erroneously attributed to Congestion of the Brain*, in his work *On the Diseases of Women*, chap. vi. 2nd ed. London, 1831.

Prognosis.—This is unfavourable, even in the early stages; more especially when there is any hereditary tendency to tuberculosis. Recovery from advanced hydrocephalus is so rare that Dr. West has never seen one instance of it; and only one case in which the child got well after the second stage had commenced. M. Rilliet also remarks that all the instances in which recovery from hydrocephalus is said to have occurred, took place before the real nature of the disease was understood; but that since its tubercular nature has been recognised, no well-authenticated case has been published by any French physician. He, however, records one case.*

The average duration of the disease, from the setting in of well-marked symptoms, is about twenty days: when the symptoms have run their course very rapidly, death has occurred in less than five days. It is probably most common between the third and fifth years of age.

Morbid Anatomy. — The post-mortem appearances usually found are, traces of inflammation of the membranes of the brain; especially effusion of serous fluid beneath the arachnoid and in the meshes of the pia mater, as well as the presence of false membranes between the arachnoid and pia mater. These appearances are always most marked at the base of the brain. The cerebral substance often contains scrofulous tubercles, while granular tubercular deposits may be seen scattered upon and between the membranes. But the characteristic morbid appearance consists of softening of the central parts of the brain, with effusion of thin, transparent serum into the ventricles. Thus, in thirty-eight out of forty cases in which death had taken place under the symptoms of acute hydrocephalus, Dr. West discovered an appreciable quantity of fluid in the ventricles; while in thirty-four of the cases the quantity was considerable, amounting to several ounces.* In a few instances the whole brain is found to have lost much of its natural firmness; but commonly the softening is confined to the central portions, and varies in degree from a slight diminution of consistence to such an extent that the cerebral matter resembles thick cream.

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* *Archives Générales de Médecine.* December, 1853.

In addition to the foregoing, deposits of tubercle are generally found in other organs of the body: their most frequent site being the lungs and bronchial glands; and the next in frequency—the liver, spleen, and mesenteric glands.

Treatment.—Our treatment must be prophylactic; for let the disease become established, and medicine can do little or almost nothing. Hence when we find a mother having an evident tendency to tuberculosis, or when we learn that she has already lost children by this disease, we should forbid her suckling; and should take especial care that her infant be reared by a strong and healthy wet-nurse. The infant is to be warmly clothed; it should be taken into the open air daily, if the weather will permit; it should have the benefit of country or sea-air at least for some weeks in the year; and at the period of weaning it should be carefully watched, while the new diet is to be simple but nourishing. In any illness that may affect it, all lowering remedies must be abstained from if possible, or at all events used with great caution; care must be taken to shield it from the contagion of the eruptive fevers, hooping-cough, &c.; and, as it grows older, the intellectual faculties must be cultivated with gentleness and judgment. Supposing that with this care the infant does not thrive, its diet should be made more nourishing, and cod-liver oil—in drachm doses, twice daily—administered.

But we may not see the patient until the disease has set in, and what is then to be done? The treatment of acute hydrocephalus is beset with difficulties; for, as an inflammatory affection, it is generally said to require remedies which the sufferer—a strumous child—will not bear. With regard to depletion, I doubt very much whether it ought to be had recourse to; at all events I remember no instance in which I have practised it.

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* *Opus citat.*, p. 53.

Some physicians recommend blisters to the vertex or nape of the neck, but the good to be derived from them is problematical. An ointment composed of one part of tartar emetic to two of simple cerate has been recommended; a piece the size of a nut being rubbed over a portion of the scalp every two hours until an abundant eruption is produced. Dr. Hahn asserts that he has cured advanced cases with this remedy.[*] In purgatives, however, we possess a valuable class of remedies; but they must be given so as to maintain a free action of the bowels for two or three days at least:—F. 13 or 14.

At the same time that these agents are employed, Dr. West advises the continued administration of calomel, in one or two-grain doses, twice or thrice daily. Green evacuations, resembling chopped spinach, follow its use: salivation is very rarely produced in young children. The local employment of cold is likewise an important remedy when used in the first stage of the disease. A rag wetted with cold water, or any simple evaporating lotion laid on the child's head and frequently renewed, will generally suffice: but it may be necessary to have recourse to the use of ice.

When the child is teething, many practitioners resort, as a matter of course, to scarification of the gums; forgetting that the irritation arises from the passage of the tooth through the bony canal of the jaw, rather than from pressure on the gum. Such practice is only to be adopted when there is distinct evidence that the gum is offering resistance to the tooth, or when there is decided tenderness and swelling of the gum. Should the vital powers become much depressed, either from the course of the disease or from the use of the remedies, stimulants must be freely had recourse to. I have frequently given a child from six to twelve months old a teaspoonful of port wine and water—equal parts, or port wine and beef-tea —in the same proportions, every hour, or every second hour, with the greatest advantage. If physic is preferred, some ammonia with Hoffmann's anodyne may be ordered, according to F. 57, or 58. The diet must be light but not poor: good veal-broth or beef-tea, the yolk of an egg beaten up in milk, and arrowroot will often be serviceable. When the sickness causes all food to be rejected, I have seen iced water exceedingly useful.

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[*] *De la Méningite Tuberculeuse, étudiée au point de vue clinique.* Par H. Hahn. Paris, 1853.

SECTION VI.—SIMPLE ENCEPHALITIS.

Our knowledge of the effects of inflammation of the parts within the cranium is not sufficiently perfect to enable us to point out with certainty the symptoms which indicate inflammation of the substance of the brain—phrenitis, as distinguished from that of the membranes—meningitis; and fortunately the distinction is not of much practical importance, since it is doubtful whether meningitis and phrenitis ever occur as separate diseases. Simple encephalitis is a very rare disease during childhood: while acute hydrocephalus, as I have before remarked, is very common.

Symptoms.—After a restless night, the disease sets in suddenly with a violent attack of partial or general convulsions, accompanied by fever, and sometimes by hurried breathing. As the convulsions diminish, the child becomes drowsy or comatose, and continues so for a few hours until they return. When they again cease, there is often vomiting, and a return of the stupor: and there may be complete abolition of the intelligence, subsultus tendinum, trismus, squinting, contraction of the pupils, and perhaps hemiplegia. The pulse is quick and irregular; the bowels are open, and the motions passed involuntarily; the face is pale and the expression vacant; and at the end of three or four days, death takes place during a fit of convulsions, or from increase of the coma.

In some forms of simple inflammation of the brain the course is different and slower. At the commencement there is sickness, drowsiness, great irritability, frontal headache, and general fever—lasting perhaps for seven or ten days: convulsions then make their appearance. The convulsion is generally long and severe; it may be followed immediately by coma, which in a few days is fatal; or it may recur frequently at short intervals, and pass into coma at the end of twenty-four hours. Dr. Watson thinks that when nausea and vomiting are the earliest symptoms in adults, the inflammation has had its origin in the cerebral pulp—in the substance of the brain; and that when the attack commences with a convulsion, the inflammation has commenced in the pia mater or arachnoid.

In all the forms of this dangerous complaint there is great variety in the symptoms, and much observation is necessary to put us on our guard against the insidious characters which many of the cases assume, and the deceitful appearances of amendment which often take place. Fortunately the disease is of rare occurrence. It may terminate fatally in a few hours, or the patient may struggle on for two or three weeks: or although death is the most common termination, yet recovery may ensue in children with good constitutional powers. The *post-mortem* appearances usually found are, great vascularity of the meninges; a loaded state of the sinuses; serous effusion beneath the pia mater and into the ventricles; the deposition of pus or false membranes between the bone and the dura mater, or the dura mater and arachnoid; thickening of the membranes; and ramollissement, or softening of the cerebral substance.

Causes.—I have already spoken of the occasional occurrence of disease of the brain from inflammation of the internal ear. Hence it will suffice here to put the practitioner on his guard against this affection of the ear; which, though it gives rise to much pain and discharge at first, yet is apt to become chronic, and in this condition to progress insidiously but very mischievously, if neglected. The other causes of simple meningitis are not very clear. In some cases it has been attributed to dentition; in some, to the suppression of an eruption on the scalp; in others, to exposure of the head to the sun; and again in others, to injuries—such as blows and falls.

Treatment.—The means which are most to be relied upon are the sedulous application of cold to the head, the use of purgatives, the exhibition of mercury or of the iodide of potassium, and restriction to a low diet.* With regard to the use of cold, I believe it will be found most valuable; but it must be applied continuously for many hours, the condition of the child being watched. Pounded ice, or an artificial freezing composition, or a mixture of pounded ice and salt, placed in bladders—as I have before directed, can alone be trusted to. Active purgatives—F. 9 or 13—so as to empty the intestinal canal, and perhaps to produce a revulsive action on the mucous membrane, will be needed; their use being followed by mercurials —F. 34—or by the iodide of potassium—F. 38. From my own observations during the past few years, I believe that this last agent is by no means employed as frequently in the acute inflammations of childhood as it deserves to be. Given in doses of one grain every four hours, dissolved in weak tea or plain barley-water, I have seen it produce relief in croup, and in some severe cases of bronchitis; and although I have not had an opportunity of trying it in the disease under consideration, yet I cannot help thinking it would prove very valuable.

Counter-irritants to the scalp can only be of any value when it is thought—if such a supposition can ever be entertained—that the encephalitis is due to the suppression of some cutaneous eruption.

In all stages of the disease the practitioner must watch his little patient almost hour by hour; must be careful that he is kept dry and clean; and that the bladder does not become distended.

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* Although Dr. J. F. Meigs, and many authors, state that the most powerful antiphlogistic treatment is necessary, yet I would counsel the practitioner not to resort to bleeding, for the reasons already mentioned. It is, however, but fair to quote Dr. Meigs' own words. He says—"Venesection ought always to be preferred to local bleeding, even in the youngest children, unless it is impossible to find a vein, or unless this is evidently too small to bleed well. If we cannot succeed in performing the operation at the bend of the arm, we must resort to the vein running over the inner ankle, or to the external jugular. When venesection cannot, from any reason, be employed, blood should be freely drawn by means of leeches or cups. It is customary to apply the leeches to the temples or behind the ears. I may remark that MM. Rilliet and Barthez object to the application of leeches to the head, and propose that they should be placed rather about the anus, or on the inferior extremities." *On the Diseases of Children*, p. 360. Philadelphia, 1848.

Should the disorder happily yield to these measures, great care will be requisite for some time—especially with regard to diet and the avoidance of all excitement—to prevent a relapse.

SECTION VII.—CHRONIC HYDROCEPHALUS.

Chronic hydrocephalus, or dropsy of the brain, is met with in children at various ages, as the result of a great variety of circumstances. When congenital, as it often is, it is generally associated with malformation of the brain—with deficiency of some of its parts. It is sometimes the result, sometimes the precursor, of acute hydrocephalus. The head attains a very great size in this disease, the unossified sutures readily yielding to the pressure of the liquid: the skull of James Cardinal —who lived to the age of twenty-nine years—measured rather more than thirty-two inches in diameter.* The serous fluid is usually contained in the lateral ventricles, which are often expanded into one cavity; very rarely the effusion takes place only on one side: occasionally it is collected in the sac of the arachnoid.

Symptoms.—The effects of dropsy of the brain are not very uniform. Frequently the bodily functions are but little impaired, sometimes not at all, till a short time before death; it is remarkable also how little the mental powers are affected in many cases, though in some instances it produces complete idiocy. The most frequent symptom is convulsions: in some cases there is a fit daily, but it may be slight, and consist only of a twitching of the muscles of the mouth, or of a peculiar rolling of the eyes. The enlargement of the head may not become apparent until the disease has existed some short time; but in congenital cases it is usually apparent from the birth. As the affection progresses there is wasting of the flesh; the infant sucks greedily, yet gets weaker; the head seems too heavy, so that the infant cannot support it in an erect position; there is generally constipation, and the evacuations are unhealthy; there is drowsiness but the sleep is disturbed; vision is impaired, sometimes lost; and there may be spasmodic attacks of dyspnœa. Although essentially an affection of childhood, yet cases are recorded in which it has affected adults; thus the celebrated Dean Swift suffered and died from it. According to Dr. West, almost every case is fatal: either directly, by the convulsions or great debility induced; or indirectly, by rendering its victims more liable than healthy children to other diseases, and less able to bear up against them. Professor Gölis, of Vienna, affirms on the contrary, that of the cases which began after birth, and which were seen and treated early by him, he saved the majority.

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* *Reports of Medical Cases, &c.*, by Dr. Bright, p. 431. London, 1827-31.

Diagnosis.—When the disease is thoroughly established, it can hardly be mistaken; the large head upon the diminutive emaciated trunk and wasted extremities, together with the disproportion in size between the cranium and face—making the visage triangular, producing a distressing but most characteristic appearance. In the earlier stages, however, the diagnosis is not so easy; HYPERTROPHY OF THE BRAIN being very likely to be mistaken for chronic hydrocephalus, inasmuch as it sometimes produces well-marked symptoms of cerebral disturbance and enlargement of the head. In most of the recorded cases of cerebral hypertrophy there were epileptic fits, or paroxysms of convulsions; the intellectual faculties were dull; the head seemed too heavy to be borne; and headache was complained of. But when the skull enlarges equally with the undue development of the brain, there may be no morbid phenomena; since there will be no pressure. The general health, however, suffers; the child wastes and gets weak, and often becomes afflicted with rickets or scrofula. This condition must not be too actively treated, for the *nimia cura Medici* will only be baneful. The great point is to maintain the general health, by bark or by some preparation of iron; by salt-water or tan-water sponging-baths; by sea-air; and by a nourishing diet. A small horse-hair cushion, with a piece cut out large enough to receive the occiput, should be prepared for the child's head to rest upon.

On comparing this plan of treatment with that required in chronic hydrocephalus, it will at once be seen how important it is not to mistake one disease for the other. The error is not very easily avoided. But in hypertrophy of the cerebral mass the symptoms are less serious than in chronic hydrocephalus;

they come on more slowly; and the head seldom attains the same size. In the latter affection, also, the fontanelles and sutures are more widely open, and the head assumes a more rounded appearance, than in the former: moreover in dropsy of the brain there is often a certain amount of transparence, which can be readily recognised if a light be held upon one side of the head.

Treatment.—The plan advocated by Professor Gölis, after great experience, consists in the administration of calomel in quarter or half-grain doses, twice daily; together with the inunction of one or two drachms of mild mercurial ointment into the shaven scalp once in the twenty-four hours. At the same time the head is to be kept constantly covered with a flannel cap, to prevent all risk of the perspiration being checked. If no improvement be perceptible after a lapse of six or eight weeks, diuretics—as the acetate of potash, or squills, or both—are to be combined with the mercurial treatment; and an issue should be made in the neck or on each shoulder, to be kept open for months. When convalescence is once established, he thinks benefit is derived from small doses of quinine—a quarter of a grain three or four times daily.

Two remedies—*compression* of the head, and *puncturing* it—have been strongly advocated by some writers. Compression is best effected by bandaging, or by the application of strips of adhesive plaster applied over the whole of the cranium, so as to make equal pressure on every part. In cases where there are no symptoms of active cerebral disease, pressure will probably do good.—Puncture is performed with a small trocar and canula at the coronal suture, about an inch and a half from the anterior fontanelle, so as to avoid the longitudinal sinus; only a part of the fluid is to be taken at one time, and gentle pressure must be kept up both during its escape and afterwards. Moreover the trocar is to be introduced in a perpendicular direction. This operation is only to be had recourse to when other means have failed; and when the bones of the skull have not become united together. While resorting to either proceeding, constitutional remedies are not to be neglected; and I would especially advise the administration of cod-liver oil, of iodide of potassium—or what is better in many cases, iodide of iron—and of mercury in alterative doses, such as two or three grains of the hydrargyrum cum cretâ every night.

Dr. Watson mentions two hopeless cases—a lad whose age is not stated, and a boy about twelve years old—successfully treated on a plan suggested by Dr. Gower, after the administration of mercury in the usual form and of other remedies, had failed to give the slightest relief. Ten grains of crude mercury were rubbed down with a scruple of manna and five grains of *fresh* squills. This formed a dose which was taken every eight hours, for three or four weeks. It caused a profuse flow of urine, great debility, and emaciation: no ptyalism. When the symptoms of hydrocephalus had disappeared, the health was restored by steel.*

SECTON VIII.—INFLAMMATION OF THE MEMBRANES AND SUBSTANCE OF THE SPINAL CORD.

1. MENINGITIS OF THE SPINAL CORD is an uncommon affection in this country, although an epidemic of it prevailed in the Irish workhouses about ten years ago,† and in many parts of France between the years 1842 and 1844. In the first instance it was almost confined to boys about twelve years old; in the second case, it affected youths at the period of puberty. The disease usually came on suddenly with pain in the abdomen, vomiting and purging, and collapse; succeeded in a few hours by strong reaction, heat of skin, frequency of pulse, stiffness of the muscles, retraction and fixing of the head, convulsions, coma, and death. In every case the spinal arachnoid was found to have been chiefly affected, and in most instances the membranes of the brain had been slightly involved. Layers of lymph were frequently present under the arachnoid and in its cavity, sometimes extending along the whole anterior and posterior surfaces of the cord: generally, too, the latter was apparently healthy.

2. ACUTE INFLAMMATION OF THE SUBSTANCE OF THE CORD is

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* *Lectures on the Principles and Practice of Physic*, p. 458, vol. i. 3rd ed. London, 1848.

† An account of this epidemic has been given by Dr. Mayne in the *Dublin Quarterly Journal of Medical Science* for August, 1846.

more rare than the preceding. It generally produces softening of the cord with paralysis. The following is an interesting example of it:*—A girl aged eleven years, whose occupation as a sempstress obliged her to remain for many hours daily in a sitting posture exposed to cold draughts, was seized three weeks after following this employment, with dragging and tearing pains in the back of her neck. As these pains grew more severe, voluntary power over the arms became impaired, and the paralysis increasing rapidly in spite of the application of leeches to the back of the neck, she was admitted into the Hospital for Children at Vienna, under Dr. Mauthner's care, on 26th December. Both arms were then completely palsied, flaccid, cool, and almost insensible; the lower extremities still obeyed the will, but the girl was unable to stand firmly. The mind was clear, appetite good, deglutition easy, pulse natural; and in these respects her condition continued unchanged to the last, except that on the day of death the pulse became very frequent. On the 28th the legs were palsied, and the urine passed involuntarily. On the 29th, voluntary power over the hands and feet was completely lost, and sensation was imperfect. On the 30th, sensation was quite lost in all the extremities: the child desired to pass fæces, but had not power to do so. On the 31st the sphincter ani was likewise paralyzed and open to the size of a shilling. On January 4th, the hardened fæces began to fall out of the gaping anus: the respiration was feeble, and the articulation difficult. On the 6th there was much distress; for many days there had been no sleep; the whole of the left side of the body was completely paralyzed; and only the right side of the chest moved in respiration. The exhaustion was so extreme that the voice was scarcely audible, but the muscles of the face still retained the power of motion and sensation perfectly, and the intellect was quite clear: the child died the same night. The spinal cord presented the only morbid appearance; the membranes being perfectly healthy. The medulla oblongata was as soft as butter, of a yellow colour, without a trace of its natural organization; and the same condition was presented by the whole of the spinal cord as low as the cauda equina, where it once more resumed its natural appearance and character.

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* Quoted by Dr. West. *Liber cit.*, p. 138.

3. Chronic Inflammation of the Substance of the Cord sometimes results from caries of the vertebræ; and sometimes from injury to the cord by shocks, blows, strains, &c., without any disease of the bones. It generally occurs in strumous children. When produced by caries, the paralysis which results is due partly to the inflammatory action, and partly to the distortion of the spine and the mechanical compression of the cord.

SECTION IX.—INFANTILE TRISMUS.

Infantile trismus, trismus nascentium, tetanus of new-born children, or nine-day fits, is a peculiar malady which occurs in infants about the commencement of the second week after birth. This affection is very rare in this country, but was very common in the Dublin Lying-in Hospital until the late Dr. Joseph Clarke introduced improvements in its ventilation and cleanliness; and it is still very frequent in the West Indies.

Symptoms.—The onset of this disease is in general gradual. Some hours after birth it is perhaps noticed that the infant is very fretful, frequently whining and crying; its sleep is disturbed, and during sleep there appear to be curious attempts at smiling; it is restless when awake, and twists its limbs about without any cause; there is a livid circle round the eyes; the evacuations from the bowels are greenish and slimy; and there is generally a great desire for the breast.

After these indications have been more or less noticed for a few days, and sometimes without any warning whatever, the infant is seized with violent irregular contractions and relaxations of the muscular frame, especially of the muscles of the extremities and face. These convulsive motions recur at uncertain intervals, and produce various effects. Sometimes the agitation is very great; the mouth foams; the thumbs are riveted into the palms of the hands; the jaws are locked from the commencement, so as to prevent the action of sucking and swallowing; any attempts to wet the mouth or fauces, or to administer the medicines, seem to aggravate the spasms; and the face becomes turgid and of a livid hue, as do most other parts of the body. From this latter circumstance nurses speak of this form as "the black fits." The conflict lasts from eight to thirty hours, and in some very rare instances to about forty hours; when the powers of Nature seem to sink, exhausted and overpowered by their own exertions. There is a milder variety, termed by nurses "the white fits," in which the paroxysms are less frequent, the power of sucking is enfeebled but not lost, and the attack is prolonged from three to nine days.*

Causes.—Although opinions on this subject vary, it seems impossible to doubt that a vitiated state of the atmosphere is the powerful predisposing cause. This may operate—as Professor Colles ingeniously suggested—by inducing an unhealthy or unkindly form of inflammation or ulceration at the navel; so that the disease is really a kind of traumatic tetanus immediately excited through the wound occasioned by the separation of the umbilical cord.

Morbid Anatomy.—The peritoneum covering the umbilical vein has been found in many instances very vascular, this vascularity sometimes extending up to the edge of the liver: the portion of membrane in the course of the umbilical arteries, is usually inflamed, the inflammation often reaching as far as the bladder. There have also been seen signs of inflammation of the coats of the umbilical arteries: and more rarely of phlebitis in the umbilical vein. Conjoined with these appearances, the vessels of the spinal arachnoid are engorged; and sometimes there is effusion of blood or serum into its cavity, or extravasation of blood external to the theca. Less frequently the membranes at the base of the brain have been found much congested.

Treatment.—All that we can do is to avert this fatal malady by hygienic precautions: by having the lying-in room clean and thoroughly ventilated, by attending to the mother's diet, and by taking care that the infant is kept clean and dry. With respect to the direct treatment I can only suggest the inhalation of the vapour of chloroform, continuously for many hours; with the application of ice to the spine. As regards other remedies Dr. Collins says—"I have never seen an instance where the child seemed even temporarily relieved by the measures adopted. Calomel has been tried in large quantity, also in small doses often repeated, as well as extensive friction with mercurial ointment. I have tried frequent leeching along the spinal column, also repeated blistering over its entire length. Opium I have exhibited in many ways, both in very large and small doses; also tartar emetic in the same manner, and at times both combined. I have tried tobacco extensively, in the form of stupes and injections of various degrees of strength, from *one* grain to the ounce of fluid, to *five* or more; besides the frequent use of the warm bath, oil of turpentine, tincture of soot assafœtida, and many of the ordinary purgatives and stimulants; and all, as far as I could judge, without a shade of relief."*

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* Abridged from an excellent paper by Dr. Joseph Clarke, in vol. iii. of the *Transactions of the Royal Irish Academy*.

SECTION X.—EPILEPSY.

Epilepsy is a disease the leading symptoms of which are sudden loss of consciousness and sensibility, with clonic spasm, usually followed by coma; the attack recurring at intervals. It is as common during the early years of life as subsequently; and is as difficult to cure. After the age of seven years, female children are more subject to epilepsy than male.

Symptoms.—There are sometimes, though not in the majority of cases, *premonitory symptoms* sufficient to warn the patient of an approaching seizure. These warnings differ both in duration and character, in some cases being too short even to allow the sufferer to dismount from horseback, or to get away from the fire, or even to lie down; while in other instances, many minutes, or even hours, elapse before the attack. Dr. Gregory, of Edinburgh, was assured by an epileptic that when a fit was approaching, he fancied he saw a little old woman in a red cloak advance towards him, and strike him a blow on the head, on which he at once lost all recollection and fell down. Spectral illusions, headache, giddiness, dimness of vision, confusion of thought, and especially that peculiar sensation known as the *aura epileptica*, constitute the most frequent premonitory symptoms. The epileptic aura is differently compared by patients to a stream of cold water—or a current of cold or warm air—or the creeping of an insect—the sensation commencing at the extremity of a limb, and gradually ascending along the skin towards the head: when it stops, the paroxysm takes place.

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* *Practical Treatise on Midwifery*, p. 517. London, 1836.

Diagnosis.—The commencement of the seizure is generally characterized by the utterance of a loud piercing shriek or scream, immediately after which the child falls to the ground senseless and violently convulsed. Hence the disease has been called by the vulgar the *falling sickness*, or more vaguely, *fits*. During the attack the convulsive movements continue violent; there is gnashing of the teeth, foaming at the mouth, the tongue is thrust forward and often severely bitten, the eyes are fixed and partly open, the breathing is laborious or almost suspended, the face flushed and turgid, and death, in fact, seems about to take place from suffocation: when—gradually—these alarming phenomena subside, and shortly afterwards cease, leaving the epileptic insensible, and apparently in a sound sleep, or state of coma, from which he recovers exhausted, but without any knowledge of what he has just gone through.

Prognosis, Cause, &c.—The average duration of the fit is about five or eight minutes; it may last for half an hour or more. It may also be very slight or very severe, constituting the *petit mal* and the *grand mal* of the French. The periods at which the seizures recur are variable. At first there is often an interval of two or three months; but as the disease progresses the intervals become shorter, until hardly a day passes without one or more paroxysms. In recent cases especially, the fits often take place in the night, either on just going to sleep or on awaking. As may be imagined, various accidents are likely to occur from falls, &c., during the fit: and many children have been severely burnt from thus falling upon the fire. The tendency to epilepsy is often hereditary. Malformations of the head are frequent predisposing causes. When an epileptic dies who has only laboured under the disease for a short time, no appreciable lesion of any part of the nervous system can, as a rule, be discovered. If death occur during a paroxysm, the brain is often found more or less congested. In cases of long standing, disease of the cerebral blood-vessels, with softening or induration of the brain, may be found. Occasionally the bones of the skull are thickened or otherwise diseased.

Treatment.—As in adults so with children this must have reference to the measures to be adopted during a fit, and those to be employed in the interval.

During the fit the patient should be laid on a large bed, air freely admitted around him, his head raised, and his necktie, together with any tight parts of his dress, loosened. A piece of cork or soft wood should, if possible, be introduced between his teeth, to prevent injury to the tongue. Cold affusion to the head will sometimes be useful, especially if the countenance is turgid and congested. In cases preceded by the epileptic aura, the application of a ligature just above the part where the sensation is experienced has been said to prevent the attack.

In the interval we must endeavour to improve the patient's general health, and especially to give tone and firmness to the nervous system. Dr. C. B. Radcliffe, in his excellent "Comments on Convulsive Diseases," has well shown that everything tending to depress the vital powers does harm. Mineral tonics, especially the salts of iron, zinc, and silver, are consequently to be employed. The cold shower-bath may be especially recommended, if it can be borne, otherwise the tepid sponging-bath should be substituted; the diet must be simple but nutritious; the patient's habits must be regulated by such rules as common sense will dictate—daily exercise, early hours, and quiet amusements; while mental excitement or exertion is, on the other hand, especially contraindicated. Backwardness in book-learning will prove no evil, when compared against the persistence of epilepsy.

SECTION XI.—ECLAMPSIA NUTANS.

Eclampsia nutans, or the "Salaam" convulsions of infancy, is an important but very rare malady—so rare that the majority of practitioners never see an example of it. It is probably a form of epilepsy; and like it may lead to impairment of the intellect. Thus of four cases—the histories of which have been collected by Mr. Newnham*—two terminated in complete idiocy, and two in impairment of the intellect. The ages of the sufferers were 16 months, 4½ months, 12 months (?), and 6 months respectively.

Symptoms.—The pathognomonic symptom by which this affection is distinguished—and which induced Sir Charles Clarke to denominate it "the Salaam" convulsion, is a peculiar, involuntary, rapid bowing forward of the head, and occasionally of the body; the bowings being repeated in rapid succession, and the attacks coming on in paroxysms several times daily. The severe attacks appear usually to come on in the morning on awaking from the night's sleep. After a time cerebral symptoms and general convulsions arise, or pure epilepsy; there may be hemiplegia or paraplegia; and the little patients pine and waste away. After several months, the symptoms remit; and at the end of two or three years the bodily health may be partially restored. The causes of this affection are involved in obscurity.

Pathology.—Mr. Newnham believes that the essential character of this malady is inflammatory action of a weak or strumous character. This probably commences in the membranes investing the medulla oblongata, and extends to the membranes at the base of the brain. Hence exudations of lymph or serum occur, cause pressure, and, consequently, paralysis; the regular nutrition of the brain is interrupted, and its manifestations blunted; while in the more aggravated cases, the organ becomes so deteriorated, as to lose all power of carrying on the intellectual functions, it having in all probability, partaken of the same kind of inflammatory action as first appeared in its investing membranes.

Treatment.—The two chief points to attend to are these:—Keep the secretions in order by calomel in small doses, or by the hydrargyrum cum cretâ, or by aloes; and at the same time support the powers of life by bark, or by quinine combined with some preparation of steel. In the cases which have been referred to, hydrocyanic acid palliated the symptoms, while opium aggravated them: had chloroform been in use, it doubtless would have been tried.

Tepid or cold bathing will be useful, and so will a nourishing diet: the body must also be warmly clad, while the head is kept cool. All quick movements, and all harshness or anything which produces mental excitement should be carefully avoided.

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* Clay's *Obstetric Journal*, vol. ii. Manchester, 1849.

SECTION XII.—CHOREA.

Chorea, or St. Vitus's dance, is characterized by incomplete subserviency of the muscles of voluntary motion to the will, giving rise to irregular, tremulous, and often ludicrous actions. It has been quaintly designated "insanity of the muscles."

Symptoms.—This disease occurs most frequently in young girls between the ages of six and fifteen, and begins generally with twitchings of the muscles of the face. By degrees, all or almost all the voluntary muscles become affected; the child finds it impossible to keep quiet; there is a constant movement of the hands and arms, and even of the legs; the features are most curiously twisted and contorted, and the articulation is impeded; while these movements are, moreover, always most severe when the child is watched. If you ask your patient to put out her tongue, she is unable to do so for some moments, but at last suddenly thrusts it out, and as suddenly withdraws it. If you tell her to walk, she advances in a jumping manner, by fits and starts, dragging her leg rather than lifting it, and alternately halting and hopping. She cannot even sit still; her shoulders writhe about, she picks her dress, and shuffles and scrapes the floor with her feet. During sleep these irregular actions usually cease. When the disease lasts long, the countenance assumes a vacant appearance bordering on fatuity, and some imbecility of mind becomes manifest. If auscultation be practised, an anæmic bellows-murmur will frequently be heard accompanying the first sound of the heart. The functions of the stomach and bowels are also frequently deranged; the appetite is irregular; the abdomen swollen and hard; and there is often constipation. These symptoms, however, all cease on the termination of the disease; which is scarcely ever fatal, or even dangerous, unless it merges into organic disease of the nervous centres, or into epilepsy.

Chorea may last from one week to several months; the average duration is probably five or six weeks. It is often complicated with hysteria; and it has been observed to happen in conjunction with—or on the termination of—rheumatic fever, and rheumatic inflammation of the heart. Although most common in girls, yet boys not unfrequently suffer from it.

Pathology.—Chorea may be merely symptomatic of some affection of the nervous centres or of the heart, or it may be purely idiopathic. In a few cases that have proved fatal, the only morbid appearances that could be discovered were pericarditis and endocarditis; in others, there has been congestion of the meninges of the spinal cord; in a third class, some organic affection of the brain; but in the majority no morbid change of any kind. Dr. Begbie maintains that chorea and rheumatism, though apparently different diseases, depend upon some identical or analogous blood-poison: but it may be doubted whether this idea of their pathology is correct, since rheumatism is common in some districts where chorea is very rare, while the complication of both diseases is exceedingly unfrequent.

Treatment.—The bowels are to be regulated, irritation subdued, and the system strengthened. For this purpose, the employment of cathartics of a stimulating nature is necessary; such as aloes, calomel and jalap, or—where worms are suspected—the oil of turpentine. A combination of tonic or antispasmodic medicines with purgatives, is often found to be serviceable.—As soon as the secretions are moderately healthy, a course of treatment calculated to give tone to the nervous and muscular systems is to be commenced; and our two great remedies are the cold shower or douche bath, and steel. As regards the former, it should be employed every morning on the patient's rising; with respect to the latter, different preparations have been recommended. Perhaps the best is the carbonate of iron, given in doses varying from one scruple to two drachms, mixed with treacle. The sulphate, or the ammonio-citrate, or the tincture of the sesquichloride of iron may, however, be used almost as advantageously. Where the shower or douche bath causes alarm, or seems to disagree, a warm sulphur bath, as recommended by many French physicians, will prove very efficacious. The diet must be nutritious; exercise in the fresh air freely allowed; and mental excitement guarded against.

SECTION XIII.—PARALYSIS.

Infantile paralysis is by no means the same alarming affection as paralysis of the adult; for though often obstinate and occasionally incurable, yet it is not perilous to life. Moreover it is very rarely the result of the same serious disease of the brain or spinal cord. The terms *myogenic paralysis*, and *the essential paralysis of infants*, are applied to cases of partial muscular paralysis, arising independently of any appreciable lesion of the nervous system. The palsy often affects only a single limb—as one leg, or very seldom one arm, or one side of the face, or even a single muscle—as the sterno-mastoid; or one whole side of the body may be affected—hemiplegia; or the lower half of the body—paraplegia. It often dates from such an early period, that it appears most probably to be due to some defect of conformation: such cases can of course only be remedied by some mechanical means to lessen the inconvenience of the deformity.

The evils which result from persistence of the paralysis are very great: for if it is never followed by death, still it produces an altered condition in the nutritive functions of the affected muscles, and often leads to incurable deformity. Not only do the affected parts cease to grow in the same proportion as the healthy, but the limbs waste, for they are imperfectly nourished: and although they do not seem to want sensation, yet their power of motion is lost or diminished. Consequently if the child begins to walk, the leg drags; and as it fails to support the body, the child falls. Supposing one arm to be paralyzed, it will soon be noticed that it is not used equally with its fellow, and that when raised it falls by its own weight. In many instances, partial or complete loss of power over certain limbs or particular muscles of a limb, is noticed after slight and brief cerebral disturbance: in other cases, the paralysis comes on during that irritable state of nervous system which coexists with teething; sometimes it appears after either of the eruptive fevers; and frequently it supervenes suddenly, without any apparent constitutional derangement.

The *treatment* must vary according to the cause. In all cases the general health is to be attended to, and the functions kept as nearly normal as possible; purgatives will often be needed, followed by tonics, and nervous stimulants. The little patient is to be taught to walk while being supported in a go-cart, or in a baby-jumper; or if old enough, by means of a pair of crutches. It is of the greatest importance that the muscles of the limb be daily exercised; hence friction should be used, together with gentle shocks of electricity. After the age of four years, Dr. West gives the eighth of a grain of the spirituous extract of nux vomica thrice daily; increasing the dose slowly till it reaches the third of a grain. Good diet, sea-air, and tepid bathing will increase the chance of cure.

Facial hemiplegia is not unfrequently seen in infants soon after birth. It is probably caused by some injury to the branches of the seventh pair of nerves either by the forceps, or from pressure during the passage of the head through the pelvis. The distortion usually diminishes in a few hours, and quite disappears by the end of a week or two without any treatment.

SECTION XIV.—NIGHT TERRORS, DISORDERS OF THE MIND, AND IDIOCY.

1. Night Terrors.—A young child may go to bed quite well, but two or three hours after it has been asleep, or perhaps in the middle of the night, it suddenly awakes in great alarm, and utters loud cries. Its attention seems absorbed by some frightful dream—probably about a bear or a dog, or some animal which is thought to be in the bed; and for a few minutes it fails to recognise its nurse or parents who have been attacked by the noise. After having been soothed and taken into the nurse's arms, it weeps and sobs, then gradually grows quiet, and falls asleep: and probably the attack does not return until one or more nights afterwards. Seizures of this kind are generally due to some sympathetic cerebral

irritation induced by disturbance in the intestinal canal: they must not be confounded with those attacks which are owing to sudden and severe pain, such as arise in the course of some chronic affections of the ear. In treating these cases the grand point is to regulate the functions of the abdominal viscera, and to relieve the constipation which generally exists. A combination of mild aperients with tonics—F. 3, 41, &c.—will often effect a cure; especially if the diet be at the same time rendered simple, nourishing, and digestible. The child's cot ought also to be placed by the side of the nurse's bed; the child should not be left alone; a fire or a candle should be kept burning in its room; and great kindness should be shown to it, when it awakes with this mental torture.

2. Disorders of the Mind.—The mental disorders of childhood have not had that attention bestowed upon them that their importance demands; and this is to be regretted for many reasons, but especially because upon their early recognition and proper management depends all hope of their successful treatment. It is not sufficient that the practitioner be acquainted with the symptoms of confirmed mental imbecility or of idiocy: he ought likewise to be prepared to advise upon those perversions of the moral faculties—as stubbornness, insubordination, very bad disposition, fits of passion, and that indolence, vanity, or morbid craving for sympathy leading to the feigning or exaggeration of illness—which, unless checked, often end in permanent disorder of the intellectual powers, or scarcely less miserably in some obstinate form of hysteria.

The peculiarities of the mind in early life are even more numerous and important than those of the body; and they impart certain characteristic features to the mental disorders of this period. "A child's experience"—says Dr. West—"is small, his ideas are few, and those are gathered from the world around him, not from his own reflections; while one impression succeeds another with greater rapidity than his feeble memory can hold fast. Hence, in disorders of the mind in early life, we do not meet with the distinct hallucinations, the fixed ideas, which characterize insanity in the adult. But though the intellectual powers are imperfectly developed, the feelings and the impulses are stronger, or, at least, less under control, than they become with advancing years; and one great object of education is to bring them into proper subordination. Mental disorders, then, show themselves in the exaggeration of those feelings, the uncontrollable character of those impulses; in the inability or the indisposition to listen to that advice or to be swayed by those motives which govern other children. The affection, in short, is of that kind to which the name of moral insanity is usually given. With this state of mind, however, the child is of course less teachable than others—less able to apply to any form of learning; while fits of passion or of sullenness sometimes for days together put a stop to every attempt at instruction. The disorder of the moral faculties thus reacts upon the intellect; the child learns but little, and consequently grows up ignorant, as well as ungovernable; till at length either the evidences of insanity become with its advancing years unmistakable, or the mind growing more obtuse from long want of culture, the case sinks down into one of mischievous idiocy." *

The frequency with which children exaggerate some little ailment or feign some disease, renders it necessary that the physician should always be upon his guard: for to allow himself to be deceived is to produce cruel mischief, and to lay the foundation for the subsequent formation of all kinds of hallucinations. In a case which gave me some anxiety, inasmuch as I could discover no signs of morbid action to account for the severe sufferings complained of, I incurred some disgrace by stating—after a careful review of the history and the symptoms—that I believed there was no organic disease, and that the ailment was mental rather than physical. But that this opinion was correct, though doubted by the friends, was proved by the little girl's improvement soon after she was removed from the influence of her parents, who spoilt her; and upon diverting her thoughts to higher objects of interest than the condition of her own body. And the treatment which was here adopted, is in fact that which is indicated in most cases; and which will very often be successful when

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* *Liber citat.*, p. 189.

combined with kindness but determination, gentle mental discipline, healthy amusement, a cessation of sympathy and lamentations over the ailment, and attention to the general health—by exercise in the open air, a nourishing diet, strengthening baths, and perhaps the administration of cod-liver oil. I need hardly add a caution to the effect that the mind is not to be overtasked in combating the evils described. To rush from the extreme of too little attention to the education to too much, will only be to perpetuate the evil or to increase it: hence a tutor or governess of sound common sense must be chosen, and the nature of the case must be explained in all its bearings. Moreover the child should not be sent to a school; but rather—as Dr. West suggests—into a quiet family, where constant control and supervision will be exercised by some person competent to engage the child's affections, to enter into its pursuits, and to share its pleasures.

3. IDIOCY.—The observations which have been already made on the Cretin, render it unnecessary to say much in this place. Idiocy may be defined as that condition in which the intellectual faculties have never been manifested, or have been so imperfectly developed that the idiot has never been able to acquire such an amount of knowledge as children of his own age are capable of receiving. It is often congenital, and then doubtless is associated with some imperfect organization; but it may arise during infancy from causes acting after birth. Whether congenital or not, the mind remains undeveloped; there are no ideas, or they are few. The manners continue childish; the countenance is vacant, and devoid of aught approaching to intelligence; the features are irregular, the forehead low and flattened, the lips thick, and the mouth large and often gaping; there are transient gusts of passion, with timidity, obstinacy, and a want of affection; and often a keen greedy appetite. With this, the articulation is imperfect, or the power of speech may not exist; there is partial or complete deafness; the child can hardly be taught to walk till much after the usual time, and only by great patience; there is an inability to use the hands properly, or firmly to lay hold of objects; the period of dentition is later than usual; and frequently there is some bodily deformity—as

imperfect conformation of the cranium, rickets, goître, dwarfed stature, &c.

Happily in all or nearly all cases there are the rudiments of the intellectual and moral faculties; and it is by kindly fostering and educating these rudiments and by cultivating such aptitudes and good inclinations as may be manifested however slightly, that the poor idiot can be removed from the class of mere brutes, and can be taught to control his animal appetites and propensities. Even in the congenital forms of this affliction much can be done, but only by such earnest men as Dr. Guggenbühl; who are content to sacrifice everything in order zealously and unostentatiously to practise a calling, which I believe stands alone as the very highest occupation that any man can follow.

CHAPTER XVII.

DISEASES OF THE ORGANS OF RESPIRATION AND CIRCULATION.

SECTION I.—CORYZA.

It is scarcely possible to overrate the importance of a careful study of the diseases of the respiratory apparatus as they manifest themselves in the young; for not only do they give rise to very painful symptoms, but such is their fatality, that—according to the Registrar-General's Reports—nearly one-third of the deaths under five years of age, occurring in this metropolis, are due to them. It is curious, however, that during the first month or so of life the mucous membrane lining the trachea and bronchi is not as susceptible to the influence of cold, as it afterwards becomes; while, on the other hand, the Schneiderian membrane lining the nostrils appears to be readily impressed by very slight causes. Hence coryza, or nasal catarrh, or vulgarly "the snuffles," is a common affection among infants a few weeks old.

Symptoms.—Coryza is usually ushered in with slight febrile disturbance, sneezing, running from the eyes, and slight discharge of thin mucus from the nostrils: while owing to the tumefaction of the mucous membrane of the nares, each inspiration is accompanied by a peculiar snuffling or snoring noise, and the infant is obliged to breathe chiefly through its mouth. If the attack be severe, respiration through the nose will be altogether prevented; and the infant will then be unable to suck, inasmuch as directly he closes his lips round the nipple, he will be compelled to quit it, to escape suffocation. Thus, the uneasiness produced by the general disturbance will be increased by the sense of hunger; so that unless the plan of feeding with the spoon be resorted to, great exhaustion and emaciation will speedily result.

Occasionally the inflammatory action is more violent and extensive, giving rise to a pseudo-membranous exudation; or to an abundant secretion of tenacious mucus from the Schneiderian membrane. The symptoms are then of a much more dangerous character; and as the vital powers are much depressed, this form of the disease has been termed *coryza maligna.*

Causes.—It is probably due to cold and damp: neglect in keeping the infant clean and dry may give rise to it. It is sometimes a forerunner of one or other of the eruptive fevers: and occasionally it appears to be connected with a syphilitic taint.

Treatment.—The slight attacks require but little treatment beyond attention to the clothing, &c., so that the delicate patient may be kept warm: inasmuch as they subside spontaneously in the course of a week or ten days. When there is any difficulty in sucking, the milk should be drawn off, and the infant fed with it by the aid of a spoon. In severe cases, the general health must be supported by a course of tonics—F. 57, 58; a few alterative doses of mercury will be sometimes beneficial, especially when the disease becomes chronic; while the tendency to the formation of the false membranes is to be combated by injections of alum—gr. x. to the ounce of water, or of nitrate of silver—gr. iij. to water one ounce. In all instances, care is to be taken by cleanliness and the use of a simple cerate to prevent the discharge from forming dry crusts at the orifices of the nostrils: since such crusts increase the irritation and help to obstruct the breathing.

SECTION II.—CROUP.

Cynanche trachealis, tracheitis, or croup, is an inflammatory disease of the trachea—often of the larynx and trachea; ending, in the majority of cases, in the more or less abundant exudation of false membrane upon the affected surface.

It is one of the most serious and fatal diseases of childhood: it is most common perhaps during the second year of life, and comparatively rare after the fifth: it occurs more frequently in male than in female children, though why it should do so cannot be well explained: when a child has once suffered from it, there is a liability to the recurrence of the disease at any time up to puberty, but the second attack is usually less serious than the first: it occasionally appears to prevail as an epidemic: and it is often complicated with bronchitis and pneumonia.

Symptoms.—In describing the symptoms of croup, we may conveniently make an artificial division of the disease into three stages; viz., the precursory, the developed, and the stage of collapse or of threatened suffocation. The *precursory symptoms* are those of a common cold; slight fever, thirst, cough, hoarseness, drowsiness, suffusion of the eyes, and running at the nose. In some few instances, the child clutches or rubs its larynx, as if there were some uneasy sensation there; or there may be a slight hesitation in swallowing, as in simple sore-throat. If we examine the fauces, however, no traces of disease will be found; and if we resort to auscultation or percussion, the chest will be found healthy. At the end of twenty-four or thirty-six hours *the second or developed stage* sets in. The child is suddenly awoke—almost invariably at night—by a sensation of suffocation, with a peculiar acute, dry, ringing, brassy cough, and hurried breathing. He is agitated and alarmed, and wants to sit up, or leave his bed; his face becomes slightly swelled and flushed, and his eyes are suffused and bloodshot. Each inspiration now becomes prolonged; and is attended with a characteristic crowing noise, readily recognized when once it has been heard. These distinctive coughs, and the difficult and crowing inspirations, probably continue to recur in paroxysms, through the remainder of the night: while the little sufferer continually changes his position to find that relief which is denied to him. As the morning dawns, however, there is a slight remission of the symptoms, and a short slumber may be obtained. But the improvement is transitory; the disease advances, the fever increases, the voice becomes more hoarse, the paroxysms of cough more frequent, and the breathing more difficult and hurried; there is also great thirst, the tongue is coated with a thick fur, the pulse gets quicker and harder, and the child is very irritable and restless. It is now very commonly noticed, that the hand seizes the larynx as if to remove some obstruction; then the arms are thrown wildly about, and all covering tossed aside; the countenance becomes flushed, and at times almost livid; and as each paroxysm of cough comes on, and as the dyspnœa becomes urgent, the head is thrown back as far as possible, in order to increase the capacity of the windpipe. Through the whole progress of the disease exacerbations are observed to take place at night, with remissions in the morning: the cough is unattended by expectoration, and each fit of coughing is usually followed by a paroxysm of dyspnœa: the act of speaking seems to increase the suffering, for the child only whispers or often refuses to utter a word: the bowels are constipated: and although the appetite for food is quite lost, there is a constant desire for drink, notwithstanding that deglutition sometimes appears to cause pain. As the disease advances towards *the third stage or that of collapse—or of threatened suffocation*, the intermissions between the paroxysms grow shorter, so that there is scarcely any remission; the cough gets more difficult, less audible, suppressed, and strangulating; the voice is nearly or quite abolished; the croupal respiration is permanent; and every now and then suffocation seems imminent. Moreover there is drowsiness, which soon becomes extreme, though the sleep is uneasy; and the child starts and wakes in terror and grasps convulsively at any object near him. If no relief be given by the expectoration of the muco-purulent matter or of the membranous exudation obstructing the larynx and trachea, the skin becomes cold and covered with clammy sweats; the pulse gets very quick, feeble, and intermitting; the respiration grows more difficult and accompanied with a hissing noise; the movements of the larynx are forcible and incessant; the head is thrown back, the alæ nasi are rapidly dilated and contracted, the eyes are dull and sunken, and the complexion livid; the countenance is expressive of the greatest agony; until at the end of about twelve or eighteen hours the child dies with signs of convulsive suffocation, or it sinks exhausted into a state of coma from which death ultimately relieves it.

The practice of auscultation in the second and third stages, yields information as to the amount of air entering the lungs, and the extension or not of the inflammation to the bronchial tubes and lungs. When the obstruction to the entrance of the air is great, the inspiratory murmur may be quite imperceptible in the smaller bronchi, except during an unusually deep inspiration after a fit of coughing: at the same time there is healthy resonance on percussion. According to Barth and Roger,* a kind of vibrating murmur or *tremblotement* can be heard over the larynx or trachea, when the false membrane has become partially detached and is floating: but this murmur is seldom to be detected. Should bronchitis supervene, we shall find the sonorous rhonchus indicative of it, masked in some degree by the croupy noise in the trachea; and such will be the case with regard to the small crepitation of pneumonia. But in the latter case there will be impaired resonance on percussion over the inflamed portions of lung.

The *duration* of the disease varies according to the violence of the inflammation and the strength of the patient: the average time is from two to six days, a fatal issue being most common on the fourth day. Occasionally, however, it runs a very rapid course. Thus, Professor Gölis, of Vienna, relates the case of a healthy little boy, aged four years; who—going into the open air on an extremely cold day—was attacked with croup, which proved fatal in fourteen hours.†

Morbid Anatomy.—The mucous membrane of the larynx, trachea, and bronchial tubes is generally found inflamed, red or livid, congested, and swollen: sometimes there are abrasions or ulcerations: and very frequently there is a layer of viscid muco-purulent matter, or more commonly an exudation of false membrane. This membrane is found more frequently in the larynx than in the trachea, and in both more often than in the bronchial tubes: while on the Continent frequently, but very rarely in this country, the exudation is also found on the velum palati, and in the fauces and pharynx. It generally presents the appearance of a thin but rather firm layer; it is unorganized; and consists of either coagulated albumen or of fibrine, but most probably of the former. Signs of pneumonia are not unusual: but care must be taken not to confound the appearances due to pulmonic congestion arising from the suffocative influence of croup, with the results of inflammatory action.

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* *Traité pratique d'Auscultation*, p. 261. 2nd ed. Paris, 1844.

† *Tractatus de rite cognoscendâ et sanandâ Anginâ membranaceâ.* Obs. iv., p. 141. Viennæ, 1813.

Pathology.—From the foregoing it seems evident that this disease consists of inflammation of the mucous membrane, exciting spasmodic action in the larynx and trachea, and giving rise to a peculiar product—a pseudo-membranous secretion. The result is imperfect aëration of the blood, for the access of air to the minute vessels is impeded by the spasm as well as by the accumulation of the croupal productions.

The question as to whether the inflammation is of a simple kind, or dependent upon some specific poison in the system—as is the case with the eruptive fevers, &c.—has been entertained but not satisfactorily answered. My own views are certainly in favour of the latter opinion, and for these reasons:—the second attacks of croup are—as a rule—much less severe than the first, because the susceptibility of the system to the action of the poison is partly exhausted, just as is seen in the practice of syphilisation: the occasional prevalence of the disease in an epidemic form, seems to indicate a specific agent as its cause: when laryngitis is excited in children by some poisonous irritant, or by drinking boiling water from the spout of a tea-kettle, the results are very different and false membranes are not exuded, even though the inflammation extend to the trachea. Cases of croup though rare in the adult sometimes occur, but the symptoms are different from those of simple laryngitis, and they do not yield to the same treatment—*i. e.*, to making an artificial opening into the windpipe—which sometimes cures the latter: while if laryngitis be artificially produced in the lower animals, false membranes are not exuded; though croup—identical in its phenomena and organic changes with the disease in the human subject—does spontaneously occur in them, as is seen in lambs, calves, puppies, cats, and in chickens—constituting the "pip." The latter especially often prevails epidemically in a farm-yard, and produces a large mortality.

Complications of Croup.—One of the most dangerous, is with cynanche maligna, as is sometimes seen when croup occurs during the course of scarlatina anginosa. The exudation thrown out from the inflamed surface, forms a pellicle which covers the fauces and extends down the pharynx as well as down the air-passages: occasionally the pellicular exudation is only formed in patches, giving rise to an appearance of thin sloughs. Most authorities agree that the inflammation may originate in tonsillitis, thence extending over the fauces, and down the pharynx and larynx. Occasionally croup is complicated with aphthous ulcerations about the mouth and palate: this is seen when the disease occurs in feeble subjects, who have been previously suffering from disordered states of the alimentary canal. When croup supervenes upon measles, small-pox, or erysipelas, the inflammatory fever assumes a low type, convulsions are frequent, the difficulty of respiration is excessive, and the paroxysms of suffocation are extreme. Lastly, the croupal inflammation of the larynx and trachea, may extend to the bronchial tubes, and thence to the substance of the lungs—pneumonia; a complication which in almost all cases terminates fatally.

Diagnosis.—The history of the attack, the hoarseness or loss of voice, the dry ringing cough, the early severity of the symptoms, the exacerbations and remissions, the croupal inspirations, the inflammatory fever, the heaving of the thorax, and the motions of the larynx and trachea, distinguish this disease from every other. It can indeed only be confounded with true laryngitis; but this affection occurs in adults, very rarely in children, except as associated with croup; it causes a fixed burning pain in the larnyx, increased by any examination; it does not give rise to the exudation of false membranes; and—if prolonged—it ends in suppuration, or ulceration. The diagnosis between croup and spasm of the glottis is very simple: for in the latter there is an absence of fever and of the peculiar cough, the intermissions between the fits of suffocation are complete, and there are general convulsions, with spasmodic contractions of the toes and thumbs during the seizure.

Prognosis.—Croup may terminate in—1. Recovery. This result may be expected in mild forms, when the respiration is comparatively quiet during the intervals between the paroxysms of cough; when the cough is loose, and followed by the expectoration of muco-purulent matter, or of fragments of the membranous exudation; when there is a gentle perspiration over the skin; when the disease is uncomplicated; and when it is not attended with great prostration of the vital powers. 2. The disease may pass into some other malady, or excite additional disease,—thus materially increasing the danger. In addition to the obstruction of the respiration produced by the exudation of croup, this affection tends to give rise to spasmodic closure of the glottis; thus inducing —through the fits of suffocation which result—great pulmonary congestion, and a marked disposition to consecutive disturbance. The extension of the inflammation to the bronchi and to the substance of the lungs is a very unfavourable event; producing lividity of the face, great drowsiness, cold clammy sweats, great frequency of pulse, and suffocating paroxysms of cough with very short intermissions. What is called laryngeal or tracheal consumption may result from croup; characterized by pain in the larynx, suffocating cough, spasmodic attacks of dyspnœa, muco-purulent expectoration, and hectic fever,—coming on after the subsidence of the acute symptoms, and perhaps just as a successful termination is about to be prognosticated. Or, the active signs of this affection may be subsiding, but a relapse may take place, owing to the aggravation of the slight inflammatory action which remained unsubdued: this tendency to a relapse, must make our prognosis guarded for the two or three weeks during which it exists, in all instances; but particularly in weakly irritable children. Lastly congestion of the brain, giving rise to the effusion of serum into the ventricles, convulsions, &c., may be an indirect consequence of croup. Dr. Copeland and others have met with cases of hydrocephalus following the disease, but they are not common. 3. In the greater number of cases it is to be feared, this disease ends fatally. Great danger is to be apprehended when the symptoms progress to the third stage; when the fever from the first, is intense; when the attacks of dyspnœa are very severe; when the cough is not followed by expectoration; when the pulse is very frequent, small, and irregular; and when the countenance becomes livid, the eyes sunken, the features contracted, the tongue dark, and the lips covered with sordes,—all symptoms indicative of great exhaustion.

Causes.—Croup is more frequent in cold, damp, changeable climates, than in warm regions: hence it is common in the north-west countries of Europe, but almost unknown in the south. It is also most prevalent in low moist localities; in the winter months and in the early spring; and especially perhaps after the long continuance of heavy rains with east or north-east winds.—Children of a nervous and sanguine temperament seem more disposed to the disease, than others; so, when it occurs during the first twelve months of life it is seen most frequently in weakly infants brought up by hand; and boys are more liable to it than girls, perhaps—though this is very doubtful—because they are more exposed to its exciting causes. Some authors imagine that an hereditary tendency to croup often exists; others, that the disease is infectious; but the only support to these opinions is derived from the circumstance that two or more children in the same family are often seized with it, forgetting that they have been placed under the same circumstances as regards the exciting causes. There is but little doubt, that though croup usually occurs as a sporadic disease, yet it sometimes prevails as an epidemic; and perhaps it did so more in former times than in the present day.

As regards the immediate or exciting causes of croup—the foregoing must be regarded more as predisposing causes—very little is positively known: but it is probable that habitual exposure of the neck and throat to cold, insufficient clothing, and such circumstances as induce common catarrh and bronchitis, will under certain conditions give rise to it.

Treatment.—In no disease, probably, is it more necessary to be prompt, cautious, and unwearying in our attendance. Even where an attack of croup is merely apprehended in a child having a catarrh and slight rough or ringing cough, we should carefully watch the patient, place it in a warm bath for ten or fifteen minutes, confine it to bed, keep the air of the apartment moist by the evaporation of boiling water, allow only a spare diet, and administer an emetic—F. 22, 23; repeating the bath at the end of four hours, and ordering frequently-repeated draughts of a saline mixture containing small doses of antimony or of ipecacuanha—F. 31, unless the symptoms are relieved.

When the inflammatory action is established, there are three remedies on which all authorities teach us to rely,—viz., blood-letting, tartar emetic, and mercury. Perhaps there is no infantile disorder which is so surely and early recognised by practitioners, and so zealously and perseveringly treated on this plan, as croup; for mistakes in diagnosis are very rare, and errors in treatment are seldom committed,—supposing that the authorities are correct. The question may well be asked then,—How is it that the disease is so fatal? I believe, from my own experience, because one of the chief agents is not only inappropriate but mischievous. Every physician knows that when he is summoned to a consultation on a case of croup, he is sure to find that the sufferer has been freely bled, either generally or locally; and he probably is informed that *in spite* of the loss of blood the inflammation increased. It never strikes the practitioner that he should say—"in consequence of;" yet it would probably be nearer the truth. I would strongly urge then, that this plan of indiscriminate bleeding be discontinued; that the case be fairly looked at, in all its bearings; that the sufferer's constitution and the condition of his vital powers be fully taken into consideration; and that we hesitate to deprive the flesh of that which we are told is its life, simply because there is inflammation of the air-tube, and books tell us to treat this dangerous affection by bleeding. Moreover we are taught to bleed very freely when the child is plethoric and robust, full of blood, full of life, healthy, and vigorous, with all its powers active. But are such, the children who—generally speaking—suffer from this disease? Certainly not in town practice. And again, will bleeding render impure blood pure, or will it check inflammation? Is conjunctivitis controlled by the application of leeches round the orbit? does the vascularity decrease as the blood flows? I have never seen it do so. In rheumatic fever, which are the cases that are most liable to be affected with pericarditis or endocarditis? Is it not those that have been bled? Do women who have had natural labours suffer most frequently from puerperal metritis, or such as have had severe floodings? According to my own experience undoubtedly the latter. In short, I would counsel every practitioner to think and reason for himself: to scan every case of inflammation narrowly, and ask himself—Is there an excess of healthy blood here? and even if there be, will it not be required by-and-by to support the system under the prostrating effects of the disease? and finally—to consider well the result which has followed the employment of depletion when he has resorted to it or has actually witnessed its employment, and if he find that the good derived from the use of the lancet has been more than problematical, then I would advise him to throw the instrument away, let authorities say what they may.

But if we are not to bleed in a severe case of croup, what are we to do? When the patient is seen at the onset of the disease, the inflammatory action may sometimes be arrested by hot fomentations alone—as recommended by Dr. Lehman and successfully practised by Dr. Graves. A sponge, the size of a large fist, dipped in water as hot as the hand can bear, must be gently squeezed half dry, and instantly applied beneath the little sufferer's chin, over the larynx; the temperature being maintained by re-soaking it every two or three minutes. A steady perseverance in this plan for twenty or thirty minutes, produces vivid redness of the skin over the whole surface of the throat; while under the influence of this topical treatment, a gentle perspiration breaks out—to be encouraged by warm diluents. A notable diminution also takes place in the cough, hoarseness, tone of voice, dyspnœa, restlessness, &c.; and generally a sound sleep is enjoyed, from which the patient awakes nearly well. Supposing that this amelioration does not take place, very little time has been lost, and we must resort to emetics—a most valuable class of remedies. The ipecacuanha wine—in doses varying from one drachm to two drachms, according to the age—should be given every fifteen minutes until free vomiting has been induced: and unless the breathing is relieved, a dose sufficient to keep up the nausea should be repeated every three or four hours until decided ease is afforded. When this is obtained, great benefit will result from the administration of a draught containing a little antimony, ipecacuanha, &c.—F. 26—every two or three hours; repeating the emetic of ipecacuanha every eight or ten hours according to the symptoms. In cases where prostration appears to be coming on, an emetic of alum or of sulphate of copper—F. 21, 22—will be preferable to the ipecacuanha: while a mixture containing some ammonia and senega—F. 27—may also be judicially substituted for the antimonial medicine. At the same time that this plan is pursued, the temperature of the body is to be taken by a thermometer placed under the arm-pit, or with care under the tongue; and if—as it usually is in the first and second stages—the degree of heat is above the normal standard a warm bath ought to be administered, and the patient immersed in it up to the chin for fifteen or thirty minutes according to the effect produced. It is of course clear, that a patient having a temperature of 104° or 105° Fah., must part rapidly with some of this heat, if placed in water warmed only to 96° Fah.; unless as fast as the heat is given off it be regenerated. This bath is not only cooling, but sedative: it may be repeated twice or thrice in the twenty-four hours, but only under the personal superintendence of the practitioner. To avoid alarming the child, the bath should not be prepared in its presence; and when brought into the sick-room the top of it should be covered with a blanket, on which the patient can then be placed and slowly lowered into the water. A piece of wood or some toy may be floated on the surface, to engage the attention of the little sufferer.

Supposing that the disease advances notwithstanding these measures, or supposing that we only see the case when it has reached the end of the second stage, I resort at once to the use of the iodide of potassium in preference to any other remedy; and frequently—but especially if there be much depression—I combine with it some tincture of assafœtida and decoction of senega—F. 39. I think also that the application of the compound tincture of iodine to the outside of the windpipe, about once in every twelve hours does good; and provided that it does not raise a blister, it can do no harm. If the practitioner have great faith in mercury preventing the formation of false membranes in croup, I would advise him not to omit the iodide of potassium but to combine with it mercurial inunction, half a drachm or even a drachm being gently rubbed in every four or six hours. Calomel may also be given as a purgative—if required—in doses of two, three, or four grains. In all cases, if the powers of life are failing, wine and strong beef-tea must be frequently given; the iodide of potassium mixture being likewise continued, unless there are special reasons to the contrary. Should it be deemed advisable to aid the expectoration of the false membrane by an emetic, the best that can be administered during the third stage of croup is the sulphate of copper—F. 21.

It remains to be considered whether we can do any good by sponging the back of the fauces and the glottis with nitrate of silver; or whether the operation of tracheotomy is ever advisable. With regard to the first, it may be said, that Dr. Horace Green of New York strongly recommends it:* and he relates cases of croup which seem to show that he has beneficially applied a solution of the pure crystals of nitrate of silver— ℈ j. to ℈ iv. of the salt to water ℥j.—by means of a sponge probang, not only to the fauces but into the cavity of the glottis. As respects the second proceeding—tracheotomy—it must be confessed that I was at one time disposed to regard this operation in a much more unfavourable light than I am at present; deliberate consideration, a careful study of all the facts recorded, and the marked benefit which seems undoubtedly to have followed its performance in many cases, having led me to think that in some few instances, it may be the means of saving life.

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* *Observations on the Pathology of Croup, &c.* New York, 1849.

The great advocate for tracheotomy in the last stage of croup is M. Trousseau: who states that during the last four years he has operated twenty-four times in private practice with fourteen cures, and two hundred and sixteen times at the Hôpital des Enfans Malades with forty-seven recoveries. This result will appear more favourable if allowance be made for the miserable state in which the children are generally taken to the hospital, and the unfavourable condition of the hospital itself. In private practice, M. Trousseau believes that half the operations performed will be successful, always provided tracheotomy takes place when the chances of cure are possible. This restriction is important; for if the diphtheritic infection is thoroughly rooted in the system; if the skin, and particularly the cavities of the nose, are invaded by this special phlegmasia, as is often the case in France; if the quickness of the pulse, delirium, prostration, indicate a profound poison; and if the danger is rather in the general state than in the local lesion of the larynx or trachea, certainly the operation should not be tried, for it is invariably fatal. When, however, the local lesion constitutes the principal danger of the disease, no matter to what degree asphyxia has arrived, even if the child has only a few moments to live, tracheotomy succeeds invariably.

M. Trousseau particularly insists upon the operation being performed with due deliberation, without any attempt at display. The double canula must be employed, and as large a one as can conveniently enter the trachea. Dr. Marshall Hall has suggested that when the operation has to be performed before instruments can be procured, it may be done with a simple pair of pointed scissors. The integument, being taken up horizontally by the thumb and finger of the left hand, should be divided longitudinally by the scissors; these should then be promptly forced into the trachea, to the proper depth, and opened horizontally to the just extent; the scissors must be then turned, being kept in their place, and opened in the direction longitudinally: the operator has thus made, in in little more than a moment of time, an opening through which the patient may breathe until further appliances can be obtained. Life or death depends meanwhile upon his steady hold of the instrument. He also advises that instead of the canula, a simple instrument called the tracheotone be used to keep the edges of the wound apart. This instrument consists of three portions of silver wire placed parallel to each other, and properly attached by a cross wire soldered at their middle part, and then bent until they are parallel again; and then joined at their extremity and turned up to secure the *buttoning.** In whatever way the operation may be performed, when completed, the most urgent thing to attend to is the feeding of the child; for, under the influence of abstinence, the absorption of external miasmata as well as of the vicious secretions fabricated within the body is favoured, and the power of resistance is enfeebled. Milk, eggs, chocolate, and broths form the most suitable diet. Then also, according to M. Trousseau, all medicinal treatment must be discontinued, as interfering with due alimentation: and if blisters have been already applied, they must be healed up. With this opinion I certainly concur; though it should be mentioned that Dr. Fuller, of St. George's Hospital, attributes the failure of tracheotomy in croup, in this country, to the abandonment of the antiphlogistic and mercurial treatment after the operation. Between the canula and the skin a small strip of oiled silk or caoutchouc should be interposed; and the relatives should be taught to remove and cleanse the inner canula every two or three hours. The neck should be surrounded by a large piece of muslin, and the infant should breathe through this, so that the inspired air may become impregnated with some of the warm vapour furnished by expiration. The surface of the wound is to be pencilled daily with nitrate of silver, to prevent the formation of thick fœtid false membranes on its surface.

Sometimes after the operation there is a difficulty in deglutition, consisting in the passage of fluids through the glottis, and their penetration into the trachea and bronchi, creating great irritation. Besides this irritating effect, the child acquires an invincible disgust for its food, and will die rather than take nourishment. The best means of remedying this is to avoid liquid diet, giving solid or semi-solid substances; at the same time allaying thirst by a little cold water, given just before or long after the repast, so as to avoid exciting vomiting. The inconvenience usually commences three or four days after the operation, and rarely continues longer than from the tenth to the twelfth day. It would seem that the larynx, which thus permits liquid aliments to pass, should allow the passage of the air also; but it is not so, for if we remove the canula, the passage will be found insufficient. M. Archambault, who has paid much attention to this complication, believes that it results from the child having, by the use of the canula, lost the habit of moving the muscles which close the larynx, in harmony with those which propel the food; and he has found it advantageous to temporarily close the canula with the finger during the attempt at deglutition, the child then being obliged to bring the laryngeal muscles into action, and the harmony becoming re-established. This stratagem, however, often fails.

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* *Lancet*, 11 April, 1857.

Finally, the removal of the canula or of the tracheotone and the definitive closure of the wound require attention. The canula is rarely removable before the sixth day or later than the tenth; at the end of the first week we should take it out with great care, so as to avoid making the child cry. The infant having become accustomed to breathe by the artificial mode, may be seized with a paroxysm of fear and difficult respiration on the first removal. There may be some obstruction of the larynx, by slightly adherent false membranes, mucus, or tumefaction; and the laryngeal muscles may have somewhat lost the power of harmoniously contracting. The difficulty of breathing usually soon disappears if the child can be kept quiet, and, according to the degree in which the laryngeal passage seems re-established, the wound may be strapped with court-plaster, or left for a day longer covered with ointment or lint. If the air does not pass at all, the canula must be replaced until it can do so. When respiration is re-established, the opening in the trachea is usually closed in four or five days, and the external wound heals soon after.*

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* *Archives Générales de Médecine, &c.*, p. 257. March, 1855.

Before concluding this section, a few words must be said upon that formidable variety of croup which has been described by M. Bretonneau under the name of Diphtheritis. In this affection, the inflammation of the air-passages is often secondary: for the morbid action which leads to the formation of specks or patches of false membrane usually commences on the soft palate, fauces, and tonsils; and then extends upwards into the nostrils as well as downwards into the pharynx and larynx. This disease is rare in England: when it occurs, it is generally seen in the children of such parents as are obliged to reside in the crowded ill-ventilated streets of large cities; while in them it seems to be most common after an attack of measles, or just as the eruption of this fever is declining. The great depression induced by this malady, contraindicates all antiphlogistic treatment. The vital powers must be supported by good nourishment; stimulants are to be frequently and freely administered, followed by tonics—especially by bark; and the parts affected should be sponged with a strong solution (℈ j. to ℈ ij. to the ounce) of nitrate of silver, every twelve hours, or even oftener if the symptoms are severe.

SECTION III.—SPASM OF THE GLOTTIS.

Spasm of the glottis, laryngismus stridulus, infantile laryngismus, or child-crowing, is a remarkable spasmodic disease occurring in infants during the period of dentition; consisting of a temporary, partial, or complete closure of the rima glottidis, by which the entrance of air into the lungs is impeded or stopped.

Symptoms.—It is unattended by fever, almost its only symptom being the interruption of the breathing: the general health, however, is always below the proper standard. The convulsion comes on in this way:—the child is suddenly seized with dyspnœa, it struggles and kicks, throws back its head, and is unable to inspire; while its face and lips get livid, the muscles become slightly convulsed, and death by suffocation appears imminent. At the end of a few seconds, however, the spasm gives way, air is drawn in through the chink of the glottis with a shrill whistling or crowing sound, and the paroxysm is over; sometimes to return very shortly, or in a very few hours, or not perhaps for days. The infant shows how much it has been frightened by indulging in a loud fit of crying, and then falls asleep. Unless death should occur in one of the attacks from a long continuance of the spasm, or soon after from general convulsions brought on through the disease inducing cerebral congestion, recovery is almost sure to take place. The convalescence, however, is always tardy; and during its progress the patient requires great care to prevent any return of the attacks.

Pathology.—This affection was carefully investigated by Dr. Ley, who attributed it to pressure made by enlarged glands in the neck or chest upon the recurrent nerve, or upon some part of the eighth pair of nerves; subverting the exact antagonism by which the glottis is automatically and involuntarily kept open, and allowing its margins to come together, thus occasioning the dyspnœa and peculiar kind of inspiration so much like that of croup. It was reserved for Dr. Marshall Hall, however, to give the immediate explanation of the phenomena of this disease, by showing that it is to be attributed to some source of irritation producing reflex spasm—to some excitation of the true spinal or excito-motory system. It *originates*, says Dr. Marshall Hall, in—

1. *a.* The *trifacial nerve*, in teething.
    b. The *pneumogastric*, in over or improperly-fed infants.
    c. The *spinal nerves*, in constipation, intestinal disorder, or catharsis.

These act through the medium of—

2. The *spinal marrow*, and—
3. *a.* The *inferior* or *recurrent laryngeal*, the constrictor of the larynx.
    b. The *intercostals* and *diaphragmatic*, the motors of respiration.

Treatment.—During the paroxysm this should be the same as that employed in resuscitating still-born children: (Chapter V., section 1.) The alternate application of hot and cold water; cold affusion to the head and face; slapping the chest and nates; exposure to a current of cold air; and artificial respiration, by the ready method of Marshall Hall, if necessary. The vapour of æther or ammonia may also be applied to the nostrils; chloroform has been most successfully used by some physicians; and, as a last resource, tracheotomy may be performed.

The subsequent remedies must consist of purgatives—particularly aloes, F. 3; antispasmodics and sedatives—especially hydrocyanic acid, F. 77, 78, or 82; tonics—F. 60 or 63; and, above all, change of air. The diet should be very simple; a child at the breast should not be fed. If the mother's milk be insufficient, a wet-nurse should be procured; or the child should be nourished by asses' milk, or with a mixture of two parts of pure cow's milk to one of sweetened barley-water. It has been before shown how many of the severe diseases of infants are caused by the silly obstinacy of some mothers, who are only happy when overloading the stomachs of their children: and one of the most alarming affections thus produced is laryngismus stridulus.

SECTION IV.—HOOPING-COUGH.

Pertussis, or hooping-cough, is especially a disease of early life, infectious, often epidemic, rarely occurring more than once in the same individual, and when severe very dangerous. It is attended with a slight fever; and a peculiar hard, convulsive cough, which occurs in paroxysms at uncertain intervals. Its duration varies from two or three weeks to many months.

Symptoms.—This disease usually commences with the symptoms of common catarrh; slight rigors followed by fever, turgescence of the countenance, coryza, restlessness with irritability, and troublesome cough. In the course of a few days the slight disturbance of the health ceases; but the cough continues, changes its character, becomes convulsive and prolonged, and is attended with expectoration of ropy mucus. As the severity of the cough increases, the paroxysms assume a suffocative character which terrify the patient; the vessels of the head, neck, and face become congested and swollen during each attack; the eyes appear as if starting from their sockets; the nose may bleed; and frequently the contents of the bladder and rectum are discharged involuntarily. The paroxysms or fits of coughing recur at intervals varying from twenty minutes to three or four hours, and each is made up of a number of short, forcible, hurried expirations. These expiratory efforts are so powerful, and expel the air so largely from the lungs, that the patient seems on the point of being suffocated, until a long-protracted inspiratory act follows; the rush of air through the contracted glottis causing the characteristic crowing or hooping noise. As Dr. Todd remarks, it is the signal of the child's safety.* Directly the fit—which bears some analogy to laryngismus stridulus—is over, the child appears well and returns to his amusements; even if it end in an attack of vomiting—as it frequently does, the patient has a craving for food directly afterwards, and asks for something to eat. The cough is always most severe at night, and the first sign of improvement is manifested by a decrease in these nocturnal exacerbations. Then the paroxysms become altogether less severe and less frequent, until at the end of perhaps three weeks or even earlier no symptom remains of the disease. Under the influence of exposure to cold or of improper food, however, the cough may return with all its symptoms: so that for some weeks after apparent recovery great care will be needed.

Hooping-cough does not always occur in this simple way. Sometimes it supervenes upon other disease: thus, it may come on during convalescence from measles, and not only give rise by itself to dangerous symptoms, but very likely become complicated with bronchitis or pneumonia,—or with some cerebral affection. These *complications* may occur in any case; and inasmuch as they are very troublesome and not unfrequently very dangerous, they demand a brief notice.

1. *Hooping-cough complicated with bronchitis or pneumonia*—occurs most frequently during the cold months of winter or spring. Unless the inflammation is very severe, it will only be noticed in the commencement that the child is feverish and that the breathing is accelerated in the intervals between the paroxysms of cough; that the expectoration is opaque and glairy; and that the cough is less constantly followed by vomiting than in simple pertussis. But as the morbid action progresses, the constitutional disturbance becomes great, the respiration diffi-

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* *Medical Times and Gazette.* 4 March, 1854.

cult and quick, the pulse frequent, the fever burning, and the general signs of bronchitis or of pneumonia fully developed; and if auscultation be practised the diagnosis will not be difficult, with one exception. We are indebted to Dr. Alderson and subsequently to Dr. Graily Hewitt for distinctly pointing out that when hooping cough proves fatal, it generally does so not by giving rise to pneumonia as has been thought but by inducing catarrhal inflammation of the bronchial tubes, attended with collapse of a portion of the lungs. This airless state of a part of the lung has also been found in young children from other causes: and since it will be more fully described in the section on bronchitis, I need now say nothing more than that it is identical with that condition which sometimes occurs in new-born children, and which has been described under the name of atelectasis.*

2. *Hooping-cough associated with convulsions, congestion of the brain, or with hydrocephalus*—is not uncommon, especially in infants about the period of dentition. In these, convulsions in various forms, spasm of the glottis, screaming, &c., are of frequent occurrence, and are indicative of cerebral irritation. Congestion of the brain, owing to the return of the blood from this organ being interrupted during the paroxysms of cough, may be very slight and temporary, or excessive: in the latter case it may lead to inflammation of the membranes, or to the effusion of serum into the ventricles, or even to softening of some of the central parts. "In all cases of pertussis," says Dr. Copeland, "when chills, followed by burning heat of the surface; pains of the head, with obscure redness of the conjunctiva; a fixed, brilliant, dry, and peculiar appearance of the eye; unusual redness or pallor of the face; very torpid bowels with morbid excretions; irritability of stomach independently of the fits of cough; aversion from light or noise; heaviness or drowsiness and languor; grinding of the teeth; or sudden starting or shocks of the body in sleep; rolling or tossing back the head, and piercing screams are observed, then irritation of the brain or its membranes, which will soon pass into organic change and effusion, is manifestly present, whether there be convulsions or not.

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* Refer to Chapter V., section 1.

When stupor or unconsciousness has come on, with one arm waving in the air, or tossed over the head, whilst the other is paralyzed, a farther advanced state of disease than mere inflammatory irritation, or softening or effusion, may be inferred."*

3. *Hooping-cough may be complicated with disordered conditions of the bowels*—as indicated by a loaded tongue, foul breath, loss of appetite, a tumid abdomen, and offensive unnatural evacuations. If these symptoms continue for some time unrelieved, the chronic irritation of the digestive mucous surface gives rise to a remittent febrile disorder; in which the attacks of cough become more frequent, the breathing gets oppressed and hurried, the child's aspect becomes peculiar, and it is constantly picking its nose and lips. There is also increasing emaciation, and febrile exacerbations and remissions are observed twice in the twenty-four hours. Should the disorder proceed further still, serous effusion into the ventricles of the brain may take place, or disease of the mesenteric glands will be very likely to result.

Pathology.—When pertussis proves fatal, an examination shows the nature and degree of the complications, but teaches nothing as to the disease itself. It can only therefore be surmised that the affection depends upon some peculiar poison, which affects and irritates the pneumogastric or vagus nerve. Simple hooping-cough is very rarely fatal.

Diagnosis.—This can only be at all difficult, when—as is sometimes the case—the characteristic hoop is wanting. Even then, the paroxysmal nature of the cough, the expectoration, the intervals of complete relief, and the evidence of a tendency to cerebral congestion during the convulsive attacks will serve to mark the affection.

Prognosis.—In simple hooping-cough a favourable opinion may always be given, unless the cough be very violent, the intervals of relief short and imperfect, the breathing hurried, the rest at night very disturbed, and the appetite bad. With regard to the different complications it should be remembered, that they often make their approach very insidiously;

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* *Dictionary of Practical Medicine.* Article—*Hooping-cough*, vol. ii., p. 239.

that they are the more to be feared, the younger the child; that they are especially dangerous at the period of dentition; that they are more alarming in such children as have strumous or consumptive parents; that pulmonary complications are very apt to ensue when hooping-cough occurs during convalescence from measles or scarlatina; and lastly—that cerebral symptoms, severe nocturnal exacerbations, fever and dyspnœa during the intervals, and difficult and scanty expectoration after the fits of coughing, are signs of danger. The mortality of hooping-cough is greater in female than in male children: and the colder the season of the year, the greater will be the fatality of this disease.

Treatment.—To describe all the remedies which have been proposed for the cure of this affection would occupy several pages; but as the majority of them are worthless, such a labour is unnecessary.

The object of our treatment must be to keep the disease simple, to prevent other affections from complicating it; for since it arises from a specific contagion, like small-pox or scarlatina, so it has a tendency to run a certain course uncontrolled by art. Emetics are said to be very beneficial, followed by expectorants, such as small doses of the antimonial wine, or ipecacuanha wine, or tincture of squills; some practitioners recommend astringents, as alum; some, carbonate of potash and cochineal; others have great faith in ferruginous tonics; Dr. Gibb* asserts that nitric acid—F. 67 —is a specific, though it has not proved so in my hands; many authorities give mercury in alterative doses: while a few physicians think it necessary to bleed. But I think it is impossible not to see, as Dr. Todd points out, that this affection is not an inflammatory, but rather a spasmodic and convulsive complaint; and that, consequently, all antiphlogistic measures are to be discarded. The patient should be strictly kept from cold air; the general nutrition should be maintained by food easily digested; the chest sponged, back and front, once or twice a-day with cold water; and stimulating embrocations—F. 86—may be afterwards used to the same part. The best drugs are those known as antispasmodics; such as opium, henbane, conium, belladonna, hydrocyanic acid, assafœtida, camphor, chloric æther, and chloroform. It need hardly be mentioned that the greatest caution will be necessary in the use of these remedies, that they should be given in minute doses, and that their effects should be narrowly watched: in the Appendix of Formulæ numerous prescriptions are given, showing the doses, &c., in which they are to be ordered. Where the secretion from the bronchial tubes is excessive, it should be checked by astringents; as, for example, by alum, sulphate of zinc, small doses of sulphuric acid and infusion of bark, or gallic acid: where it is thick, ropy, and scanty, an emetic of alum or of ipecacuanha will increase and aid its expulsion. In many simple cases, when the paroxysms have been severe, I have seen benefit from sponging the fauces and glottis with a strong solution of nitrate of silver—℈j. of the salt to water ℥j. I have never tried to force the sponge through the rima glottidis into the larynx; and it seems impossible to imagine that the attempt would have been successful, had it been made. When the case becomes chronic, a cure may often be effected by change of air—by removal to the sea-side.

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* *Treatise on Hooping-cough.* London, 1854.

With respect to the treatment of the various complications, I would only advise that remedies of a depressing nature be neither too readily resorted to, nor too actively employed. In other respects, such a course must be followed as the nature of the complication and the condition of the patient may dictate.

SECTION V.—PLEURISY.

Inflammation of the pleura as a primary disease is rare during childhood, especially within the first five years of life: it is deserving of attention, however, since it not uncommonly occurs as a secondary affection in the course of pneumonia.

Symptoms.—The main symptoms, as well as the physical signs of inflammation of the investing serous membrane of the lungs, are the same in the child as in the adult. The disease is ushered in with rigors followed by fever, and an acute lancinating pain in the side, called a stitch, which pain is aggravated by the expansion of the lung in inspiration, by coughing, by lying on the affected side, and by pressure; there is also a short harsh cough, the skin is hot and dry, the cheeks flushed, the pulse hard and quick, and the urine is scanty and high-coloured. If we listen to the painful part of the chest at this period, we shall hear the dry, inflamed surfaces of the pulmonary and costal pleura rubbing against each other, and producing a *friction-sound;* if the hand be placed on the corresponding part of the thorax, this rubbing may also be felt. But the sound soon ceases; either the inflammation terminates in resolution and complete recovery, or the roughened surfaces become adherent, or they are separated by the effusion of serum, and a kind of dropsy results, known as HYDROTHORAX. If the pleurisy has been severe, the effusion probably becomes excessive—varying from one to many ounces; and the fluid accumulating in the sac of the pleura compresses the yielding lung and suspends its functions, displaces the heart, produces a bulging of the intercostal spaces, and somewhat distends the thoracic parietes on the affected side. When the serous fluid is mixed with pus, the disease is termed EMPYEMA. If we listen to the chest now, we shall find the respiratory murmur diminished, in proportion to the quantity of fluid thrown out; where this is excessive and the lung is compressed backwards—flattened almost against the spinal column—no vesicular breathing at all will be heard, but instead we shall hear the air passing into the larger bronchial tubes, the condensed lung and the layer of fluid acting as conductors of sound; we then say that *bronchial respiration* and *bronchial voice*, or *bronchophony*, exist. The bronchophony may be accompanied by a tremulous noise, resembling the bleating of a goat; it is then termed *ægophony.* If the lung be completely compressed, so that no air can enter even the bronchial tubes, then no sounds of any kind will be heard; but on the healthy side the respiration will be more distinct than natural—will be very loud or *puerile.* There will also be dullness on percussion all over the affected side, if the pleura be full of fluid; if it be only partially filled, we can judge of the quantity by placing the patient in different attitudes; for since the fluid will gravitate to the most dependent part of the cavity, so it will carry the dull sound with it. We shall also often be able to judge of the amount of the effusion by the dyspnœa which the patient suffers from; since this will, of course, be most urgent when the lung is most compressed. At this time also the child is unable any longer to lie on the sound side, clearly because the movements of the healthy lung would be impeded by the superincumbent weight of the dropsical pleura; the pain, moreover, no longer prevents his lying on the diseased side. If we measure the two sides of the chest, the side containing the effusion will be found the largest; we must remember, however, that in many persons the right side of the chest is naturally rather larger than the left. On inspection there is seen to be diminished mobility of the affected side.

After a time the symptoms begin to decrease, and absorption of the effused fluid commences. Supposing the lung to be bound down by adhesions, it will not expand in proportion to the absorption of the fluid; the affected side will then shrink inwards, and instead of any longer remaining larger than the sound side, will become smaller.

Causes.—The most common causes of pleurisy are exposure to cold and wet, and mechanical injuries. In children it most frequently is produced by the extension of the inflammatory action in pneumonia. The jagged ends of a fractured rib will often excite it, and if they wound the pulmonary pleura, air will escape from the lung into the pleural cavity. This escape of air into the pleural sac may also arise from an external wound; or from ulceration caused by the extension of a tubercular cavity. When the pleura contains air alone, we say there is PNEUMOTHORAX; when, as generally happens, there is liquid with the air, we call the disease PNEUMOTHORAX WITH EFFUSION. The physical signs of pneumothorax are great resonance on percussion, with indistinctness of the respiratory murmur on auscultation; the patient's breathing, cough, and voice, giving rise to a ringing metallic noise, like that produced by blowing obliquely into an empty flask, and hence called *amphoric resonance*. When there is also liquid with the air, we obtain in addition, on practising succussion, a sound known as *metallic tinkling*, which results from a drop of fluid falling from the upper part of the cavity and causing a little splash.

Diagnosis.—The signs of inflammation of the pleura are usually sufficiently characteristic to prevent any error. Sometimes there is a difficulty in diaphragmatic pleurisy; owing to the pain at the commencement being referred to the abdomen, being increased on pressure, and being accompanied with vomiting and purging. The urgent dyspnœa however, the dry cough, the diminution of the vesicular murmur at the base of the lung on the affected side, with attention to the general symptoms, will generally remove the doubt: moreover, the tenderness is not to be compared in severity with that which is produced by peritonitis.

Should the inflammation set in with fever, headache, and vomiting, the disease may be mistaken for some form of cerebral disturbance; but the acceleration of the breathing, the friction-sound heard on auscultation, or—if this be absent—the feeble respiratory murmur in the affected part, together with the sudden access of the acute symptoms, will point to the existence of pleurisy.

Prognosis.—In healthy subjects simple acute pleurisy is rarely fatal: of seventy-six cases treated at the Children's Hospital at Vienna, only two died.

The combination of pleurisy with pneumonia is, however, very serious; and the same must be said of the results which sometimes ensue from pleurisy, *i.e.*, from hydrothorax, empyema, &c..

Treatment.—The indications in the treatment of pleurisy are first, to subdue the inflammation; and second, to promote the removal of its products.

In the commencement, therefore, perfect quiet and rest in bed, low diet, active purgatives, and the sedulous application of hot fomentations over the affected part must be resorted to: followed by attempts to get the system slightly under the influence of mercury, through the administration of the hydrargyrum cum cretâ, or of calomel in combination with Dover's powder, or by the inunction of the mercurial ointment. Depletion by venesection, or by cupping, or by the application of leeches, is strongly recommended by some practitioners. Thus, Dr. West advises that where the symptoms are urgent and the child's previous health has been good, blood should be taken from the arm until syncope is produced; followed—in most instances—in three or four hours by local bleeding.* As, however, I have never seen any benefit arise from such practice in the young, but on the contrary much mischief, I need hardly say that I never follow it.

If the means which have been recommended prove insufficient to control the disease, and if effusion takes place, attempts must then be made to promote absorption. Two remedies are now very valuable, viz., iodide of potassium—F. 38, and the application of a succession of small blisters.

When these means fail, when the symptoms are urgent, when the child is becoming weak and exhausted, and affected with hectic fever and night-sweats, tapping the thorax, so as to let the fluid out, has been resorted to; and on some occasions with perfect success. The opinions entertained by different practitioners as to the value of this operation are very various. Dr. Hughes states that of twenty-five cases in which paracentesis thoracis was once or several times performed, thirteen may be fairly said to have recovered, so far as regards the effusion into the pleural cavity.† This result certainly appears favourable: but then how can we explain the fact that Dr. Addison—the colleague of Dr. Hughes at Guy's Hospital—considers this operation as one of the worst and most deceiving in general practice?‡

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* *Opus cit.*, p. 284.

† *Guy's Hospital Reports*, p. 366. No. 4. London, 1844.

‡ Dr. Addison believes, from the numerous cases seen every year at Guy's Hospital, that paracentesis thoracis is one of the worst and most deceiving operations in general practice. A serous cavity, he thinks, is almost invariably changed into a cavity pouring out purulent matter by the first operation; and the thick, leather-like false membranes lining the pleura soon make the operation one of very great difficulty and danger. Nature herself, if assisted by proper remedies, will often remove serous effusions from the pleura; but if once interfered with by instrumental assistance, the amount of pus separated from the system is almost incredible, and beyond her power to get rid of. Cases are mentioned of

Should it be determined to resort to paracentesis, before performing the operation it will be as well to make an exploratory puncture with a grooved needle; if fluid issue, a small trocar and canula may then be introduced. The best position for the puncture is probably the intercostal space between the fifth and sixth true ribs, at—or somewhat posterior to—their angles; provided, of course, that the lung is not fixed to this part by adhesions, and that no good reason exists for selecting a different spot. It will probably be better to remove all the fluid; if serum come out, the orifice should be closed and healed; if pus, the aperture should be enlarged and kept open.

In some examples of pneumothorax, where the dyspnœa has been very urgent, it has been found necessary to puncture the pleural cavity with a grooved needle, to let the air out; such cases, however, are very rare.

SECTION VI.—BRONCHITIS.

Inflammation of the mucous membrane of the bronchial tubes is very frequent in early childhood. Hence it is an important disease, demanding careful consideration; the importance being enhanced by two circumstances:—1. The inflammation not unfrequently advances along the smaller bronchi to the pulmonary tissue, producing a disease compounded of bronchitis and pneumonia, which has been described *bronchio-pneumonia*: and 2. The accumulation of mucus in the bronchi, resulting from the morbid action, has a great tendency to induce *pulmonary collapse*—the *apneumatosis* of many authors; a condition identical with the partially unexpanded lung of early infancy—the *atelectasis* of Jörg, the *état fœtal* of Legendre and Bailly.

Symptoms.—In its simple form, bronchitis usually commences in children, with the symptoms of a common cold; this cold instead of subsiding, becoming gradually aggravated, and attended with slight fever, hurried breathing,

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twelve and fourteen pints of purulent matter drawn from the chest, but its production is very possibly due to the first opening made in the pleura.—*Lancet*, 17th November, 1855.

quickness of pulse, and a tight dry cough. As the inflammatory action proceeds, the heat of skin increases, the respiration becomes wheezing and more laboured, the cough severe, and the countenance assumes an expression of languor. If percussion be practised healthy resonance will be found; but auscultation will reveal the dry sounds of inflammation—rhonchus and sibilus; while probably the moist sound—large crepitation, will be detected at the posterior and lower part of the chest. Now this condition, which would soon be relieved in the adult, excites alarm and anxiety for the child, owing to the frequency with which it induces *pulmonary collapse*: nothing being needed to excite this state but a copious secretion of viscid mucus with sufficient debility to prevent its expectoration, and so allow of its choking up some of the smaller bronchi. Should this occur, we shall find that the difficulty of breathing increases, without any exacerbation of the fever; and that where there was previously resonance on percussion there is now dulness and bronchial respiration. If this condition be mistaken for pneumonia, and venesection, leeches, or even antimony be resorted to, the severity of the symptoms will be increased and possibly a fatal result induced; while on the contrary, under the influence of stimulants and rubefacient liniments, relief may often be speedily given. Moreover, by the last-named remedies the diagnosis will be unmistakably confirmed; for resonance on percussion will be quickly detected where previously there was dulness, and the respiratory murmur will become audible where perhaps a few minutes before there was no vesicular murmur to be detected.

But bronchitis may tend to an unfavourable termination by other ways than by inducing pulmonary collapse: and more especially by leading to *capillary bronchitis*,—in which the smaller air-tubes become intensely inflamed, this inflammation quickly ending in a copious secretion of pus. This severe and often fatal affection may not only result from an extension of the inflammation of the larger air-tubes, but it may also occasionally occur primarily. It chiefly produces great acceleration of the breathing, so that the respirations are repeated from thirty to forty times in a minute; distressing and frequent cough; great anxiety of countenance with frequent flushings; heaviness of the eyes with injection of the conjunctiva; extreme restlessness; and great frequency with weakness of pulse. As death approaches, the face assumes a livid hue, the cough becomes smothered, the respiration more laboured, and there is great drowsiness: then for a few hours the sufferings appear lessened, unless under the influence of a paroxysm of dyspnœa, and the child quietly dies.

The *diagnosis* of capillary bronchitis is difficult, since the symptoms bear a striking resemblance to those of pneumonia: and it is by no means easy to practise percussion or auscultation, in the alarmed and restless child. If we succeed in doing so, however, we shall obtain a natural degree of resonance on percussion; while auscultation will detect—perhaps with rhonchus and sibilus—a sub-crepitant râle, a moist sound which is larger than the small crepitation of pneumonia, and yet smaller than the large crepitation of simple bronchitis. Moreover this râle is most frequently to be found at the posterior part and base of both lungs: and as the disease advances it often becomes replaced by large crepitation.

Prognosis.—Simple bronchitis is dangerous, as before mentioned, owing to the risk of its inducing collapse of the lung: and as the liability to this is great in children at the breast and in such as are less than five years of age, so in these cases the prognosis must be very guarded. Capillary bronchitis is a most serious affection; and if not directly fatal, is likely to ultimately prove so by giving rise to pneumonia.

Secondary bronchitis in enfeebled children, following measles, hooping-cough, &c., is generally very severe; for resolution of the inflammation is very difficult to bring about, and it is likely to run on to pneumonia.

Morbid Anatomy.—The mucous membrane of the bronchi is generally found more red than natural in children who have died from bronchitis; the redness varying in degree and extent according to the violence of the morbid action, being usually most marked in the secondary tubes, and sometimes extending into the smallest branches, or even into the pulmonary cells. There may be also some thickening and softening of the membrane; and it is usually covered with a thick, opaque, tenacious, muco-purulent secretion. The tubes themselves often become greatly dilated; so that either the secondary tubes assume the size of the primary branches, or only portions become expanded into the form of cavities. There is commonly also some congestion of the lungs.

When the inflammation has extended from the air-tubes to the surrounding pulmonary tissue, we then find indications of what may be really termed *lobular pneumonia.* Irregular patches of the lung, varying in size from a pea to a nut, are found of a vivid-red colour, hard and solid,—or perhaps grey and infiltrated with pus: and if there are many of these patches they may coalesce and make that which was lobular—general pneumonia.

A very peculiar appearance occasionally found has been described under the names of *vesicular bronchitis* or *vesicular pneumonia.* The portion of lung affected is dark-coloured and solid; and covered with a number of small, round, yellow spots, each containing a drop of pus. This secretion is doubtless the result of inflammation of the ultimate ramuscules of the bronchi.

But the most common result of bronchitis in childhood is not partial or general pneumonia, but a very different condition—though for many years mistaken for inflammation and described as lobular pneumonia because it attacked isolated lobules—namely collapse of the air-cells of the lungs; a condition very properly called *pulmonary collapse*, but which may be designated as apneumatosis if a hard name be desired. This occlusion or collapse of the air-cells is no doubt caused by the thick bronchial secretion presenting an obstacle, sometimes at one point, sometimes at another, to the admission of air. The child inspires feebly, and the secretion which it can neither expectorate nor expel by coughing, closes the entrance to some small bronchial tube like a valve: each succeeding expiration forcing out a little of the air retained behind the obstacle, until—as no air is inspired—the vesicles collapse.* It is readily recognised after death by the affected parts being found violet-coloured, solid, and heavy—so that they sink in water if detached from the healthy tissue: they are also less voluminous than natural, and covered by healthy pleura. On practising inflation; the collapsed portions—no matter how numerous or extensive—are quickly restored to their normal condition. Those parts most distant from the roots of the lung are chiefly affected; especially the margins of the lobes.

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* See a Paper by Dr. Gairdner on *Pulmonary Collapse* in the *British and Foreign Medico-Chirurgical Review*, vol. xi., April 1853: as well as an Article by Legendre and Bailly entitled *Nouvelles Recherches sur quelques Maladies du Poumon*, in a volume by Dr. Legendre *Sur quelques Maladies de l'Enfance.* Paris, 1846.

It is this liability to pulmonary collapse that makes infantile bronchitis such a dangerous disease: it is also often the cause of death in hooping-cough; and doubtless it has proved so in many cases of fever where the fatal result has been erroneously attributed to pneumonia.

Treatment.—This must be subordinate to the degree of inflammation present, the extent of the febrile reaction, and the strength and constitution of the child; regard being also paid to the fact of the disease being primary, or of its appearance secondarily to some other affection—as measles, pertussis, &c.

Simple bronchitis often ceases in a few days without medicine: but the child ought to be watched to guard against the occurrence of collapse of the lung, should be kept in-doors in a warm and comfortable atmosphere, allowed a simple milk diet, and permitted to drink freely of some demulcent fluid. If there be much heat of skin, or if the morbid action appear to be progressing, a saline mixture containing a little antimony or ipecacuanha—F. 31, 33—is to be prescribed.

In more severe cases attended with high fever, antimony in larger doses will often be requisite; and it is wise to commence the treatment with a free emetic dose of this remedy, followed by a purgative of calomel and jalap. As in other inflammatory disorders so in this, many physicians resort to blood-letting: but I think most practitioners agree that more than ordinary caution is required in its use. It will readily be imagined—after my remarks upon the mischief of bleeding in croup, pleurisy, &c.—that I am no advocate for taking away blood in infantile bronchitis; and not only is such the case, but remembering how readily pulmonary collapse takes place in a weakened child from mere inability to expel the viscid phlegm, I can hardly imagine any instance in which this practice is justifiable. When it is desirable in this disease to employ depressing measures, antimony will accomplish all that can be desired; and even while using this agent constant watching and great care will be needed to prevent its antiphlogistic effects being carried too far. In those forms of bronchitis which occur secondarily, this agent will seldom be tolerated at all; and then senega and squills—with or without ammonia—or a mixture containing ipecacuanha and assafœtida—F. 52, 53, 56, 57—will be found very valuable. Should pulmonary collapse take place all antiphlogistic measures must be discarded; stimulating emetics, warm baths, rubefacient liniments, and strong beef-tea with wine, then forming the remedies on which reliance must be placed. Whether benefit would be gained by allowing the child to breathe an atmosphere containing more oxygen than natural is doubtful; but in a severe case I should try the experiment.

After the acute symptoms have subsided, resort may be had to a nourishing diet, stimulants, antispasmodics, and sedatives: and in such cases I have seen great benefit from some preparation of bark, as F. 60. Morphia is an agent which is often very beneficial, when the cough is troublesome and the secretion of mucus scanty; it may be given to the youngest child—but of course only with the greatest caution—in doses varying from a quarter to one-half to one drop of the Pharmacopœial solution repeated night and morning.

Stimulating liniments, sinapisms, and such like to the back and front of the thorax do good: blisters are seldom of any benefit. When there are attacks of nervous dyspnœa a sinapism to the chest with a warm bath, will give ease more quickly than any other proceeding: when on the contrary the difficult breathing is due to the air-tubes being overloaded with a viscid secretion, an emetic will be required.

SECTION VII.—PNEUMONIA.

Inflammation of the substance of the lungs is not a common disease in infants and young children: it may occur primarily, or secondarily—as has been already shown—from the extension of bronchitis. In many treatises written only four or five years ago, pneumonia is regarded as a much more frequent affection of childhood than it is now known to be: but it must be remembered that cases of pulmonary collapse were then looked upon as inflammations of the lungs, and unhappily moreover were treated as such.

Symptoms.—In idiopathic pneumonia—*i. e.*, where the pulmonary substance has not become involved from the extension of bronchitis, but has been affected from the commencement—the symptoms sometimes commence suddenly and probably in the night with cough, hurried breathing, and burning heat of skin; but in the greater number of cases the disease comes on more gradually, and it is merely observed that the child is out of health, that it is fretful, restless, feverish—especially at night, thirsty, and apparently affected with headache. Very shortly afterwards, cough comes on, and perhaps vomiting: the bowels are constipated, the tongue is coated with a white fur, there is loss of appetite, and an attentive observer will notice that the respiration is hurried. This latter circumstance will be detected by noticing that the child does not seem able to breathe quietly through the nares, but keeps its mouth open; and that when it sucks it only does so for a few moments at a time, eagerly seizing the nipple, and then suddenly letting it go in order to take a deep inspiration.

The *first stage* of pneumonia—or that of engorgement, thus passes into the *second*—or that of hepatization. The patient is drowsy, the cough is painful and frequent, the skin is harsh and dry, the body is very hot while the extremities perhaps are cold, the countenance is heavy and anxious, the face pale, with a livid hue round the mouth, the pulse is very quick, the alæ nasi are dilated with each inspiration, and the respiration is laboured and hurried—or even panting. As children—even up to the age of six or seven—invariably swallow the sputa, we are deprived of that valuable information which is afforded by the changes in the appearance of the expectoration in the grown person.

Percussion of the chest in infantile pneumonia is not so useful as in pneumonia of the adult. Frequently, the resonance is hardly affected: sometimes, however, there is manifest dulness on the affected side, especially in the infra-scapular region. It is well known that the sounds obtained by percussion in the healthy child vary with the intensity of each respiratory movement; and also that the thorax of children under two years of age probably resounds less perfectly than the chest of adults.

The results of auscultation are more certain. The minute crepitation which is so readily detected in the pneumonia of the adult is but rarely to be found, though under the influence of a deep inspiration it may perhaps be heard for a moment; but the sub-crepitant râle—which has been previously described—is invariably to be discovered, and very often in both lungs at their bases and posterior parts. When the disease has advanced to the second stage, this râle becomes weaker and partly or completely obscured by being mixed up with bronchial breathing: it may generally be detected however, on a deep inspiration. It must not be thought that bronchial breathing in the child is the same rough, strong, whistling bruit heard in the adult: on the contrary it is feeble and indistinct, and more to be compared to a rough respiration. Should only one lung be attacked, the diagnosis will probably be aided by the loud puerile breathing which will be heard in the sound organ.

If the inflammation now progresses towards resolution, the bronchial respiration disappears, the sub-crepitant râle returns, and gradually this is superseded by the normal vesicular murmur. The general symptoms also improve *pari passu*, and in a few weeks the patient is restored to health.

Unfortunately, instead of resolution taking place, the child often dies towards the end of the second stage when an extensive portion of lung has been affected; or if it survive, and the treatment fail to check the inflammation, then the disease passes into the *third stage*—or that of purulent infiltration. The respiration is now more laboured, the voice lost, the face sunken and pallid, the extremities cold though the trunk remains hot, the pulse so frequent and small that it can hardly be counted, there are cold clammy sweats about the head, and life either becomes gradually extinct or death occurs in a fit of convulsions. On auscultation bronchial breathing is found to have quite supplanted the sub-crepitant râle; while if the child live until the lung has completely passed into the state of suppuration, large gurgling crepitation may be heard.

When pneumonia follows bronchitis, then the symptoms are slightly modified. From the commencement the cough is more paroxysmal and distressing, the dyspnœa more urgent, and the general distress greater. The sub-crepitant râle is more extensively heard in both lungs, while small crepitation cannot be detected at all. The disease usually runs its course very rapidly, and is generally fatal.

Diagnosis.—There can be no difficulty in diagnosing pneumonia from bronchitis: the greater severity of the symptoms, the intense heat of the trunk persisting through the whole course of the disease, the quick and feeble pulse, the panting respiration with the continual movement of the nostrils, the sub-crepitant râle, and the absence of rhonchus and sibilus all indicating that the substance of the lungs is inflamed.

In most cases of pneumonia whether in the child or in the adult a certain amount of pleurisy exists with the pneumonia; though it may be very slight. Sometimes, however, an attack of pleurisy is mistaken for pneumonia: but this error will be avoided by remembering that in pleurisy the pain is more marked and severe than in pneumonia, that at the outset a friction-sound can generally be detected while there is no sub-crepitant râle, that percussion over the inflamed pleura produces pain, and that at the commencement of the inflammation there is greater restlessness and perhaps disturbance of the brain than occurs in the early stage of pneumonia.

Terminations.—Pneumonia is a most severe disease and often ends fatally in spite of all our care. In infants both lungs are usually attacked. Mention has already been made of the termination of the inflammation by resolution and the gradual restoration to health. If the morbid action proceed to the third stage, diffused suppuration of the lung is a frequent consequence. In such cases there is not uncommonly a temporary improvement before death; for the alarming symptoms diminish, the dyspnœa decreases, and the cough returns. But if we look carefully into the case, we shall find that the body still remains very hot, that there are nocturnal exacerbations of the fever, and that the child rapidly wastes away: and if we have raised the hopes of the parents we shall in all probability have merely exposed our ignorance, for usually death occurs from exhaustion in the course of two or three weeks.

Occasionally, in depressed constitutions, acute inflammation of the lung terminates in *gangrene*. The characteristic symptoms of such an occurrence, is an intolerably fœtid state of the breath, resembling the odour which proceeds from external gangrenous parts. Unless the mortified portion be small, death will in all probability result.

Treatment.—Blood-letting, tartar emetic, and mercury, are again the agents on which we are mainly taught to rely. It can hardly be necessary for me to repeat my opinion that bleeding will do no good: but I feel so strongly upon this point that even at the risk of being thought tedious I must urge my readers not to resort to it. The influence of established rules is so great, it is so difficult to contend against authority, so many plausible arguments may be put forward to the disadvantage of novel truths, and it is so certain from the occurrences of every-day life that there are still some people, who—like the old writer—prefer going wrong with Plato to going right with less-gifted men, that it is necessary again to put forward a protest against depriving the young of their blood by the lancet, by the barbarous cupping-glasses, or by leeches, simply because there is inflammation present in an important tissue. On the Continent the practice of treating infantile pneumonia by bleeding is I believe much more rare in the present day than it was six or eight years ago: and many of the best foreign physicians assert that this practice will not only invariably and permanently debilitate the system, but that not unfrequently it is almost the direct cause of death. Yet one of the best and most recent of our writers on children's diseases—I mean Dr. West—still recommends it. He says: " In a healthy child of two years old, a vein may be opened in the arm, and ℥iv. of blood may be allowed to flow, provided that faintness be not earlier produced, without there being any reason for us to apprehend that the plan we are adopting is too energetic. It often happens that the child faints before this quantity of blood has been drawn, while in other cases not above one or two ounces of blood can be obtained. Still, whenever the patient is seen at the commencement of the attack, general depletion is desirable, even though it should be necessary to follow it up by local bleeding." Again: "How great soever may have been the relief which followed the first bleeding, it is not always permanent; and hence the child should be seen again in from six to eight hours, and if the symptoms appear to be returning with anything of their former severity, depletion must be repeated; though then local blood-letting is to be preferred to venesection, even in cases in which bleeding from the arm had been resorted to in the first instance."*

Objecting as I do to blood-letting in pneumonia, yet I have too much respect for the talented author of the passages I have quoted to venture upon criticising them. Hence it will suffice for me to say that I have seen the practice under discussion do great harm; I never saw it do permanent good; I never saw the inflammation cut short by it. In an acute attack we must rather look forward to guiding the disease to a satisfactory conclusion, than to cutting it short by powerful remedies. Mild purgatives or alteratives to maintain a gentle action of the bowels; occasional emetics to expel the viscid phlegm, if there be any difficulty in expectorating; the administration of a little liquor ammoniæ acetatis to act upon the skin; perhaps counter-irritation over the chest by turpentine stupes; and a light diet, with a free supply of cold water,—these are the principal means on which we must rely. Sometimes warm baths, frequently repeated, give ease and temporarily alleviate all the symptoms of pain and uneasiness: if there be much restlessness, small doses of opium do great good, or even the gentle inhalation of chloroform will be beneficial: and if there be much prostration, wine and strong beef-tea will be called for.

Directly the disease seems to be passing into the third stage or that of suppuration, there can—I should think—be no doubt that the discontinuance of all lowering measures is indispensably necessary; and that then opium, wine, and strong beef-tea, are the only remedies to trust to. The bowels may be made to act daily by a purgative dose of calomel, if necessary;

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* *Opus cit.*, p. 268.

but it must be borne in mind that if diarrhœa be induced, harm will certainly result. Directly convalescence sets in bark must be freely given: followed at the end of eight or ten days by some ferruginous tonic, and the most nourishing kinds of food.

SECTION VIII.—PHTHISIS.

The phthisis, or pulmonary consumption of children, presents certain special characters and symptoms distinguishing it from the same disease as it occurs in after life; though unhappily, as regards the prominent features and the result, there is a striking resemblance. In the remarks which have been already made upon tuberculosis—Chapter XV., section 2—the most important of the pathological peculiarities of this disease have been pointed out: and consequently it is now only necessary to speak of the symptoms, causes, treatment, &c.

Symptoms.—The points of difference between phthisis in the child and phthisis in the adult, are the more strongly marked the younger the patient: and perhaps at about fifteen years of age all distinctions may be said to cease. The disease comes on very gradually; the child is observed to be out of health, it is listless, it droops, it has no appetite, it loses flesh and strength, and perhaps it complains of slight pains about the chest. After a time a slight dry cough comes on; but this is never severe like the cough of the adult, nor is it attended by expectoration—for the child swallows what the older person spits up. In children, too, there is an absence of hæmoptysis, diarrhœa is not very common until the latter stage of the disease, and very frequently there are no colliquative sweats.

As the disease progresses, the listlessness increases, the skin becomes rather hot and dry—especially at night, and probably an attack of bronchitis occurs. In any case, the respiration becomes quicker and attended with wheezing; the flesh wastes rapidly; the skin becomes wrinkled and cadaverous; the face assumes an appearance of premature old age; the strength decays; aphthæ form about the mouth; and the child dies either from exhaustion with the body reduced to a skeleton, or from some intercurrent attack of bronchitis or of pneumonia. When the bronchial glands are extensively tuberculized—*bronchial phthisis*, as it is sometimes called—the symptoms often set in after one or more attacks of bronchitis, there seems to be a liability to frequent attacks of catarrh, the respiration becomes more oppressed, and the condition of the patient fluctuates—the sufferings becoming frequently and apparently causelessly aggravated. Death may occur from bronchitis; or from hæmorrhage—the suppuration in some bronchial gland extending and involving a blood-vessel; or from tubercular peritonitis; or from acute hydrocephalus; or the powers of life may be gradually exhausted and the child at length die in an extreme state of weakness and marasmus.

The signs derived from percussion and auscultation cannot be much relied on: since the deposit of tubercle in children is much more diffused than in the adult, and we moreover lose that information which the phenomena of the voice afford in the latter. The chief points are these:—the resonance on percussion is generally less than natural; there is coarse breathing heard; the expiratory sound is prolonged; the breathing is occasionally interrupted; and there may be sibilant, mucous, and sub-crepitant râles on one or both sides of the chest. When the bronchial glands are enlarged there will be dulness on percussion between the scapulæ; and if the lungs are free, resonance over other parts of the thorax, with tolerably good respiration.

Diagnosis.—This disease may be mistaken for remittent fever in the early stages; but it is distinguished by the gradual onset and progress of the symptoms, the much-less heat of skin, the absence of delirium, and the auscultatory signs. It is very important to distinguish between simple pneumonia and that which often complicates phthisis in early life: in the latter the heat of the body is less than in the former, the difficulty of breathing is out of proportion to the severity of the pneumonic signs, the pulse is less frequent, and there is often an hereditary tendency to tuberculosis—as disclosed by the history.

Prognosis, &c.—This is always unfavourable, but recovery is not hopeless. Sometimes phthisis runs a very rapid course in the young; the average duration is estimated by MM. Rilliet and Barthez at from three to seven months, although it may prove fatal in two months, or it may be protracted for three or four years.

Causes.—Hereditary influence, cold and damp air, improper artificial nourishment—or a bad quality of the mother's milk, and anything which interferes with the proper nourishment of the body—as prolonged diarrhœa, &c., are fruitful causes of the malady. The practice of bleeding in some of the disorders of infancy, will also, it is to be feared, tend to predispose to it: and thus may be explained the fact of its occurrence after an attack of acute pneumonia. Of course the pneumonia may only be a secondary occurrence; but there are many who believe that it brings on the disease, and it is not clear how it can do so except by the vital depression which the inflammation and the remedies used to combat it produce. Lastly, some authors look upon phthisis as one of the manifestations of hereditary syphilis.

Morbid Anatomy.—Both lungs usually present numerous miliary, opaque, yellowish granulations, varying in size from a millet or hemp seed to a large pea, and scattered through the different lobes, but most abundant in the upper ones. These tubercular deposits are seldom softened; the pulmonary tissue immediately surrounding them is congested or hepatized. The bronchial glands are almost always found greatly hypertrophied, and for the most part appear to be infiltrated with tubercle, so that none of their normal tissue can be detected: occasionally softening is found to have commenced, and to have made more progress in some of the glands than in others.

Treatment.—The principles of treatment are the same at every age. Where there is any hereditary tendency to phthisis, great attention should be paid to prophylactic measures: the infant is to be nursed by a strong and healthy young woman, it is to be warmly clothed, taken into the open air daily in fine weather, kept in properly-heated but well-ventilated apartments, and carefully watched at the periods of dentition, weaning, &c. It must also be jealously shielded from all contagious disorders; but should it unfortunately suffer from hooping-cough, from either of the eruptive fevers, or from attacks of diarrhœa, or even from catarrh, no lowering measures are to be resorted to; but on the contrary, judicious attempts should be made to support the system while curing the morbid state.

When the disease is present—when tubercular matter has become deposited in the lungs or bronchial glands—we must endeavour to *improve the general nutrition* by attention to the quantity and quality of the food, by warm clothing, by pure mild air, and by the administration of bark, steel, and cod-liver oil. Occasionally our attempts to impart strength by nourishment are foiled by the total want of appetite, or by the inability of the stomach to digest the food put into it: the result being the same whether the child take insufficient aliment or disease prevent the proper assimilation of that which is taken. In such cases there is probably an imperfect secretion of gastric juice, and few remedies here promise more favourable results than *pepsine*—the digestive principle of the gastric juice. Six grains may be given twice or thrice a day with the meals to an infant twelve months old. If the pepsine fail, raw meat, or prepared bullock's blood, may be tried: but I fancy these remedies are more useful after dysentery—see Chapter XVIII., section 3—than in simple phthisis. Change of air is an important agent in relieving the pulmonary consumption of children: the atmosphere of many parts of Italy, and of the south of France, is suitable. In our own country the preference should be given to Hastings, Torquay, and the Undercliff of the Isle of Wight.

With regard to the three medicines—bark, steel, and cod-liver oil—it need only be mentioned, that I have the greatest confidence in them, and I usually employ them somewhat in this way:—About every eight hours a dose of the tincture of bark—F. 60—is given with cod-liver oil floating upon it; and then twice in the twenty-four hours, the ammonio-citrate of iron is administered in solution, taking care that it is given with a meal, and with an interval of at least four hours from the administration of the bark. Where the oil disagrees I have found it advantageous to introduce it into the system by inunction; which may be best effected, generally, by mixing it with an equal quantity of the compound iodine ointment, and ordering it to be rubbed into the back of the thorax night and morning.—If there be much cough, very small doses of morphia with chloric æther and hydrocyanic acid, will give great relief; if there be diarrhœa, it is most likely to be checked by enemata of starch and a few drops of tincture of opium; and if there be night-sweats, the mineral acids may be given with the bark. In cases complicated with pneumonia, the bark and steel must be discontinued; and we must trust to small doses of iodide of potassium, emetics of ipecacuanha, or if there be much debility to ammonia, squills, and senega.

SECTION IX.—PERICARDITIS.

Diseases of the heart and its serous covering are more rare in the early years of life than they become after puberty; partly because rheumatism is not a frequent affection of childhood, because renal diseases are uncommon, and because fatty degeneration in all its varieties belongs especially to the processes of decay which accompany the decline of life. On the other hand we have the distressing results produced by congenital malformations giving rise to a large number of cardiac affections: for not only do these malformations produce great suffering in themselves, but they seem to predispose to endocarditis and valvular inflammation.

Pericarditis, or inflammation of the external serous covering of the heart, frequently arises from cold, from mechanical injuries, from a contaminated state of the blood produced by renal disease and the poison of scarlatina or measles, and particularly from rheumatic fever. With regard to the latter it must not be forgotten, that in children the heart is liable to be affected even when the rheumatic symptoms are very mild: and consequently every case of the kind must be most carefully watched.

Symptoms.—These are the same at all ages—allowance being made for the young child's difficulty in referring to the seat of pain, &c.—the most prominent being, high fever; pain referred to the region of the heart, often darting through to the left scapula, upwards to the left clavicle and shoulder, and down the arm; violent palpitation, the motions of the heart being tumultuous, and perceptible at a distance from the patient; irregularity of the pulse; hurried respiration; incapacity of lying on the left side; strong pulsation of the carotids; anxiety of countenance; great irritability and restlessness; piercing and distressing cries; and frequently noises in the ears, giddiness, and epistaxis. As the disease advances, there is extreme debility, cough, suffocative paroxysms, occasionally a tendency to syncope, and œdema of the face and extremities. These symptoms are not only often masked in young children by many circumstances, but even in the adult they frequently vary much in different cases. Thus, as Dr. Hope has remarked, if the effusion which results from the inflammation consists almost entirely of coagulable lymph, or if the serum thrown out has been rapidly absorbed and adhesions early effected, the circulation will be less interfered with, and less suffering will result, than in those more formidable cases where there is a copious fluid effusion painfully distending the inflamed membrane, pressing upon the heart, and embarrassing its movements.

On practising auscultation, we may find—in the earliest stages—increased intensity of the natural sounds; if endocarditis coexists, as it so frequently does, a loud systolic *bellows-murmur* will also be heard. Very early, too, a distinct *alternate rubbing* or a *to-and-fro sound*, as Dr. Watson terms it, will be audible. The bellows-sound indicates fibrinous deposits in the texture as well as on the surface of the valves, from inflammation of the internal membrane of the heart—the endocardium—and it generally continues for life. The to-and-fro sound is indicative of inflammation of the pericardium, and it generally ceases in a few days when this membrane becomes adherent to the heart, as it always does if the patient survive. When copious effusion takes place, we shall have dulness on percussion over a larger surface than in health; if the fluid does not become absorbed, we say that *hydro-pericardium* exists, which usually proves fatal.

If we classify the physical signs of pericarditis, they will be as follows:—

1. Sensations of friction communicated to the hand. 2. Friction-sounds: the "attrition murmurs" of Hope. 3. Ex-

tension of dulness over the heart, resulting from liquid effusion. 4. Friction signs, attended with—or preceded by—valvular murmurs. 5. Signs of eccentric pressure analogous to those of empyema. 6. Signs of excitement of the heart. 7. Signs of weakness or paralysis of the heart.

Prognosis.—Pericarditis—especially the rheumatic variety—is not so much to be feared for its immediate danger, as for the traces of permanent injury which it leaves behind. The endocarditis which so frequently accompanies it, especially produces mischief to the valves of the heart. The danger is great, however, when the morbid action is acute and general; or when it is set up in weak, scrofulous children; or when it supervenes upon a severe attack of scarlatina or measles.

Treatment.—In no disease was the lancet used with a more unsparing hand only a few years since, than in inflammation of the pericardium. More extended experience has shown us, however, that this heroic and sure method—as it was deemed—of extinguishing the morbid action, is not only uncertain, but often very dangerous. Then we were also taught the great importance of rapidly getting the system under the influence of mercury, after bleeding. Yet when we look to the authorities of the present day, what do we learn? The question is well answered by Dr. Markham, who says,—"We find one of the most observant and practical physicians amongst us admitting that the firm faith which he himself once reposed in the efficacy of this remedy has been undermined by the truth-telling effects of further experience."* The remarks already made on the use of mercury—Chapter III., Sections 1 and 11—quite confirm this opinion.

The treatment which I adopt is that practised by many for the relief of acute rheumatism:—the two principal remedies being opium, and the hot bath. From these agents I believe that I have seen the greatest benefit; and certainly in no instance have they been prejudicial. They give great relief to the patient's sufferings, without inducing debility; and they in no way complicate the symptoms. The quantity of opium which will be needed for infants and young children will vary with the severity of the pain and the amount of restlessness; but in all instances very small doses must be given at first, the quantity being increased as the medicine seems to be well borne. Sometimes one hot bath suffices: in other cases, it is necessary to repeat it daily, for three or four times. Alkaline drinks—F. 36—will also do good.

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* *On Diseases of the Heart, &c.* London, 1856.

In most instances it will be necessary to administer a few doses of some purgative: the neutral salts—F. 2, 3, 4, &c.—will generally agree well. At first the nourishment should be light, consisting of gruel, arrowroot, and mutton broth. Directly the strength begins to fail, however, the diet must be made more strengthening; and milk, strong beef-tea, and wine gently allowed. Dr. Stokes—speaking of this disease in adults—states that he is convinced patients are often lost from want of stimulation at the proper time; and he directs us to give support directly the pulse becomes feeble or intermittent, or the jugular veins become turgid, or pallor and coldness of the surface set in, or a tendency to faint upon exertion is manifested. "It may be laid down as a general principle that there is no local inflammation whatever, the mere existence of which should prevent the use of wine, if circumstances require it. In two cases especially—namely, cerebritis and pericarditis—we find the greatest timidity in practice with respect to the use of wine. Yet even in the first case it may be required; and in the second its employment is imperative, when, as too often happens, excessive depletion has been resorted to."*

When the effusion into the pericardium is abundant, a large blister should be applied over the præcordia; or a succession of blisters may be necessary. The iodide of potassium—F. 38—has been advantageously administered to promote absorption. It has been proposed—as a forlorn hope—in obstinate hydro-pericardium, to remove the fluid by the introduction of a trocar and canula. M. Aran, Physician to the Hôpital St. Antoine, Paris, relates a case of pericarditis with copious effusion in a young man aged twenty-three, which he treated by an injection of iodine. The pericardium was punctured from below upwards, with a capillary trocar, in the fifth intercostal space, a little below the spot where the dulness on percussion was well marked: about twenty-eight ounces of a transparent reddish serum were removed. A mixture, formed of four drachms of tincture of iodine, fifteen grains of iodide of potassium, and an ounce and a half of water, was then injected without causing any pain: a drachm or two was allowed to escape before closing the wound. The fluid having reaccumulated, the operation was performed a second time with a stronger injection, formed of equal parts (ʒxij.) of tincture of iodine and water, with one drachm of iodide of potassium. The treatment was successful.

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* *The Diseases of the Heart and the Aorta*, p. 88. Dublin, 1854.

SECTION X.—ENDOCARDITIS AND CARDITIS.

Endocarditis, or inflammation of the interior lining membrane of the heart, gives rise to a sense of oppression and uneasiness at the præcordial region; slight fever; small, feeble, and intermittent pulse; great anxiety; cold sweats; cough, and oppressive dyspnœa; jactitation; and syncope. When the inflammation is only of limited extent, or when it assumes a chronic form, the symptoms are much milder and more obscure.

Carditis, or inflammation of the substance of the heart, rarely occurs as a distinct affection, being generally combined with pericarditis or endocarditis, or with both.

Diagnosis.—If we apply the hand to the chest in simple endocarditis, or in carditis, the action of the heart will appear to be very violent; sometimes a vibratory thrill will be felt. Percussion often discovers an augmented extent of dulness in the præcordial region; this dulness may be distinguished from that caused by pericardial effusion, by the beat of the heart appearing superficial instead of remote and distinct. If we listen to the heart's action we shall detect a bellows-murmur, the most constant and characteristic of the phenomena of endocarditis.

The *terminations* of acute inflammation of the lining membrane of the heart, or of the heart's substance, are permanent valvular disease, followed by implication of the heart's substance, and all their combined consequences—as general anasarca, &c. Death rarely occurs from the acute disease; and the prognosis in valvular disease is less unfavourable in children than in adults.

The *treatment* is the same as for pericarditis.

CHAPTER XVIII.

DISEASES OF THE ORGANS OF DIGESTION AND ASSIMILATION.

SECTION I.—DISEASES OF THE MOUTH AND FAUCES.

1. The Thrush.—This affection of the mouth is very common in young infants, and is only important as evidencing impaired nutrition and a low condition of the vital powers: it is most frequently seen in infants who are artificially fed, or who are suckled by an unhealthy nurse. If we examine the mouth in a case of thrush, we shall find the mucous membrane beset with numberless small white spots, looking like specks of curd; which are most abundant on the inside of the lips, the inner surface of the cheek, on the tongue, and in less quantity on the gums. The specks fall off, but are quickly reproduced. The nature of this affection was unknown, until Professor Berg, of Stockholm, discovered in 1842, certain microscopical parasitic plants—the *Leptothrix buccalis*, and the *Oidium albicans*—in the deposited specks; and it is now generally believed that these parasitic growths constitute the essential part of the disease, just as analogous cryptogamia give rise to tinea favosa, &c. The circumstances favourable to the development of this cryptogamic vegetation are—debility, disturbance of the digestive organs, and slight inflammation of the mucous membrane of the mouth and fauces with acid secretions. The thrush can hardly be said to be peculiar to infancy, since it not unfrequently becomes developed in adult age in the course of prostrating diseases; it is then often regarded as the harbinger of death.

Treatment.—Removal of the cause, attention to the digestive organs, and subsequently the employment of alteratives and tonics will be necessary. As regards local treatment, I usually order the infant's mouth to be gently sponged with cold water after each meal; and also direct a solution of borax—ʒss. to water ℥j.—to be freely applied twice a-day with the sponge or camels'-hair pencil. The mel boracis, which is a favourite remedy with nurses, possibly tends to favour the production of the confervæ; since like all matters containing sugar it soon undergoes fermentation. According to Dr. Jenner, the application of a solution of sulphite of soda —ʒj. to water ℥j.—suffices to remove the disease from the mucous membrane of the mouth in twenty-four hours. The secretions of the mouth being acid, the salt is decomposed, and sulphurous acid is set free, which at once destroys the parasite.

2. STOMATITIS, OR INFLAMMATION OF THE MOUTH.—This common affection of young children may occur in three forms,—*i. e.*, according as the principal seat of the morbid action is in the mucous follicles of the mouth, the substance of the gum, or the tissues of the cheek.

a. Follicular stomatitis—the aphthous stomatitis of some authors—is the mildest of the three varieties: it may be idiopathic, or it may occur as a sequela of some of the eruptive fevers—as measles, &c. The attention is first directed to the child's mouth by observing that a difficulty seems to be experienced in sucking, by noticing that there is a more free secretion of saliva than usual, and that the submaxillary glands are tumid and tender. The patient is also restless and feverish, has but little appetite, seems to experience pain in deglutition, and frequently suffers from diarrhœa with very offensive evacuations. On examination, numerous small vesicles are found about the inside of the mouth, on the tongue, and on the fauces; which vesicles by bursting form ulcerations covered with a dirty-white or yellowish slough. These ulcerations sometimes remain separate and sometimes coalesce, forming a sore of considerable extent: in either case, as they heal, fresh vesicles appear, which again degenerate, and so the morbid action may continue for some weeks. When follicular stomatitis occurs as a concomitant or sequela of measles, it may become associated with diphtherite, producing an alarming malady.

In most cases very simple *treatment*, such as that recommended in thrush, suffices to effect a cure.

β. Ulcerative Stomatitis, or Noma.—This disease attacks the gums; the ulceration sometimes progressing to such an extent as to destroy these parts and denude the teeth. In all cases it produces heat of the mouth, an increased flow of saliva, offensive breath, swelling of the upper lip, and enlargement with tenderness of the submaxillary glands: while on looking into the mouth we shall see that the gums are swollen, red or violet coloured, readily bleeding to the touch, and covered with a layer of pulpy greyish matter. If the disease be allowed to creep on unchecked, the gums will be destroyed by the ulceration, and the teeth become exposed and loosened until they fall out; the morbid action also spreads to the inside of the cheeks, which become covered with irregular sloughing ulcerations, and the tongue assumes a swollen and sodden appearance. Ulcerative stomatitis is not uncommon: it occurs for the most part in weakly children who have been badly nourished, and exposed to cold and damp.

The *treatment* of this disease is not difficult, inasmuch as we possess in the chlorate of potash a remedy which may almost be deemed a specific. Five grains of this salt may be given every four or six hours to an infant one year old, in a little sugar and water. When the ulcerations have healed, bark or quinine should be administered, according to Formulæ 60 or 63.

γ. *Gangrenous Stomatitis, or Cancrum Oris.*—Gangrenous stomatitis is a much more formidable affection than either of the other varieties of this affection, and fortunately also very much more rare. It occurs in children between the ages of two and five years, who have been prostrated by some previous disease; and hence it is perhaps most common after typhoid fever, measles, and small-pox. It has been erroneously thought to arise from the action of mercury: but even if this medicine have been given, the symptoms in all probability are not attributable to it. The disease probably commences in the mucous membrane of one cheek, without pain, but with fœtor of the breath, and an abundant secretion of offensive saliva. The affected part soon becomes hard, red, shining, and tense; and if the mouth be examined a deep, unhealthy, excavated ulcer will be found corresponding in situation with the external induration. This ulcer, with its jagged edges, quickly forms a perfect specimen of phagedenic ulceration: it gives rise to a most horribly offensive dirty-coloured discharge; the gums get involved, leading to necrosis of the jaw; and the whole cheek may become gangrenous, exposing the cavity of the mouth, and giving rise to a frightful spectacle, which with the horrible stench is most distressing. The constitutional disturbance is of course very great, the pulse grows more feeble as the disease advances, and death soon relieves the sufferer; for very few cases indeed recover. There is, however, very slight—if any—pain; and the appetite is often good until the termination, even although deglutition may be difficult.

The only hope of successfully treating this disease lies in the free and early application of a powerful caustic to the sloughing ulcer: an operation which can hardly be properly performed without the aid of chloroform. Of all the caustics which can be employed, the strong hydrochloric acid seems to be the best: it must be carefully but freely used, and it should be reapplied at the end of twelve hours, if the ulceration has not been checked. Subsequently the mouth must be often syringed with warm salt water, or with a weak solution of the liquor sodæ chlorinatæ—℥j. to water ℥xij., or with a gargle of hydrochloric acid made of three drachms of the dilute acid mixed with eight ounces of water. During the whole progress of the disease I should administer the chlorate of potash in large doses of tincture of bark—F. 37; not because this salt is likely to be as nearly efficacious as in ulcerative stomatitis, but merely for the reason that there is a reasonable hope of its being slightly useful. Wine, with nourishing liquid or solid food, must also be given; and in many cases the Mistura Spiritûs Vini Gallici of the Pharmacopœia will do great good, if freely and perseveringly exhibited.

3. Cynanche Tonsillaris.—Cynanche tonsillaris—tonsillitis—quinsy—or inflammatory sore throat, is seldom seen in children under twelve years of age. It manifests itself by smart fever, redness and swelling of the fauces and tonsils, difficulty of deglutition, together with—in severe cases—pain shooting from the throat to the ear along the course of the Eustachian tube. Dyspnœa is but rarely present. Under ordinary circumstances, the inflammation runs a certain course, and terminates by resolution in a few days, merely leaving

the tonsils enlarged: when violent and prolonged, however, it frequently leads to suppuration in one or both tonsils. Rigors often announce the suppuration, and the pain is very severe until the abscess bursts, or is opened artificially.

The principal exciting *cause* of quinsy is cold. The liability to it is increased by repetitions of the attacks. It is doubtful whether it be contagious or not; from the way in which I have myself suffered from it, I am inclined to believe it to be so, but this opinion differs from that entertained by the majority of practitioners.

Hypertrophy of the tonsils sometimes results from inflammation, or it may come on slowly—perhaps during dentition—without any evident cause. The enlarged glands push up the velum, and so obstruct the passage of air through the posterior nares. Hence the voice is rendered thick, there is snoring during sleep, perhaps deafness, cough, and sometimes dyspnœa. Should it be evident that the enlarged tonsils at all impede the entrance of air into the larynx, they must be excised: unless the local application of the nitrate of silver or of powdered alum sufficiently diminishes them,—which it very rarely will do. If allowed to remain they induce flattening of the chest; probably because sufficient air cannot be taken in with each inspiration to cause a pressure from within the lungs equivalent to the atmospheric pressure without.

Treatment.—Rest in bed, low diet, an emetic at the onset followed by cooling saline purgatives, and hot fomentations or linseed-meal poultices to the throat, will be necessary. The steam of hot water applied to the fauces gives great relief. Blistering the outside of the throat, or friction with stimulating embrocations—as the compound camphor liniment, or the application of iodine paint, will often be useful, especially if the inflammation becomes chronic, and seems leading to enlargement of the tonsils. Guaiacum in full doses has been recommended as a specific in quinsy, but I have never found it of any service, unless it produced purging; and this is often better provoked by other remedies.

4. Retro-Pharyngeal Abscess.—This is the result of inflammation and suppuration of the loose areolar tissue, situated between the posterior surface of the pharynx and the

spine: and to Dr. Fleming is due the credit of first clearly describing it, and of showing that it sometimes occurs during infantile life.*

Symptoms.—The characteristic symptoms are preceded by general disturbance and fever, varying in intensity according to the constitution of the child. Indications of difficulty in swallowing and breathing then manifest themselves; the latter soon becoming so severe, particularly when the child is placed in the recumbent posture, that suffocation may even appear imminent. There is also a fixed and retracted state of the head, with rigidity of the muscles at the back of the neck; a more or less locked state of the jaws; a remarkable articulation—in children old enough to speak—the words being drawled out with pain and difficulty; the painful deglutition increases, until solids are refused and liquids regurgitated through the nose; frequent spasmodic attempts are made to swallow, as if there were something in the mouth; and on examining the fauces, a firm, projecting, round tumour is felt just beyond the base of the tongue, occupying either the median line, or inclined to one or other side. The abscess sometimes occurs as a sequela of fever; but usually it is idiopathic.

Diagnosis.—Without caution the symptoms may be attributed to some cerebral affection, or to disease of the cervical vertebræ. Attention to the phenomena just described, the cessation or diminution of the difficult breathing when the patient is raised from a recumbent to a sitting posture, with a careful examination of the throat, will remove all doubt as to the true nature of the case.

Treatment.—Surgical interference soon effects a cure. The abscess must be opened with a bistoury, shielded to near its point by lint or plaster. A spontaneous opening but rarely occurs.

5. CYNANCHE PAROTIDEA.—Cynanche parotidea—parotitis—or mumps, is a common disorder of childhood, after the fifth or sixth year; consisting of a specific, contagious, inflammatory affection of one or both parotid glands. The disease may occur as a sporadic affection, or it may prevail as an

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* *Dublin Journal of Medical Science*, vol. xvii., p. 41. Dublin, 1840.

epidemic. It first manifests itself by slight febrile disturbance, followed at the end of twenty-four hours by stiffness of the neck and lower jaw, with tumefaction and soreness in one or both parotid regions; the swelling frequently extending from beneath the ear, along the neck to the chin, and involving the sublingual and submaxillary glands. The disease reaches its height in four days, and then declines; generally disappearing entirely in two or three days more. Occasionally, during or after the decline, the testicles or mammæ become painful and swollen: but either of these occurrences are very rare in children. In only one instance have I seen the inflammation terminate in suppuration; and this result was, I believe, entirely due to the application of leeches by a silly amateur doctor.

The *treatment* consists in the employment of the antiphlogistic regimen, gentle laxatives, diaphoretics, and hot fomentations or merely flannel to the throat.

SECTION II.—DISEASES OF THE STOMACH.

1. INDIGESTION.—The word Indigestion is employed to designate a very common affection of infancy, the prominent symptom of which is vomiting. Indigestion and vomiting may result from many causes: as from—mere repletion, in which case the overloaded stomach takes the easiest means of relieving itself; from the irritation of improper food, as when weaning is too suddenly practised; or the stomach may sympathise with disease elsewhere, and hence vomiting often ushers in pleurisy and pneumonia, cerebral affections, the eruptive fevers, &c., and is common during the process of dentition; or the vomiting may be the result of spasmodic action, as happens in hooping-cough, the paroxysms of which are often terminated by sickness; or it may be due to any gastric or intestinal disorder rendering the stomach incapable of digesting the food, when the infant grows pale and languid, restless and irritable, and neither cares for the breast nor other nourishment; or the patient may be anæmic, and the powers of the stomach consequently enfeebled, as indicated—by a craving for food although vomiting occurs soon after it is taken, by the breath being sour and sickly, by acid and offensive eruc-

tations, and by constipation owing to the peristaltic action of the intestines being also diminished. When the indigestion continues for any length of time, the sickness becomes associated with all the evidences of impaired nutrition, quickly followed by general atrophy; and, unless relieved, it not uncommonly ends fatally in exhaustion, or in some secondary disease, or even in pulmonary phthisis.

Treatment.—In simple dyspepsia, with debility and loss of appetite, attempts must be made to lessen the work of the stomach as well as to impart tone to this viscus and to the system generally. To effect this two or three teaspoonfuls of cold water should be given twice or thrice in the day; the mother's milk should be diluted with water, or asses' milk may be substituted, in either case giving only a small quantity at a time; pepsine—the digestive principle of the gastric juice—should be given in six-grain doses, with two or three of the meals; tonics, with or without small doses of the diluted hydrochloric acid—F. 69—will be beneficial; and great good will result from tepid salt-water baths, and change of air. Where the stomach is simply irritable, small doses of hydrocyanic acid in almond mixture, or in the compound infusion of gentian—F. 77, 78—effect a cure, attention being likewise paid to the quantity and quality of the food taken. And lastly, when the milk is returned firmly curdled, when there is flatulence, when the vomiting gives pain, when there is stomach-ache with nauseous acid eructations, we may be sure that some acid different to the gastric juice is secreted; and this must be neutralized by an alkali with hydrocyanic acid—F. 82—while the tendency to its formation is checked by the employment of alteratives, change of air, &c. The constipation which often prevails in indigestion will be best treated by daily frictions of the abdomen with a mixture of equal proportions of soap liniment, tincture of aloes, and olive oil; or by giving one or two teaspoonfuls of the compound decoction of aloes every morning, or the same quantity of the decoction of taraxacum with a few drops of the tincture of jalap or the compound tincture of rhubarb; or, lastly, by the administration of pepsine, which seems to restore health and tone to the whole alimentary canal.

2. Gastritis.—Inflammation of the mucous coat of the stomach is not a frequent disease of children, and its symptoms are obscure. Ordinarily, complaint is made of pain occurring in paroxysms, there is vomiting—often incessant and excessive—of green and yellow fluids, constipation—occasionally diarrhœa—or costiveness alternating with diarrhœa, a tympanitic and swollen state of abdomen, heat and tenderness over the epigastrium, great thirst, anorexia, a loaded and white tongue, hot and dry skin, and a quick and small pulse. Gastritis may be induced by improper food, and by swallowing acrid poisonous substances. It is to be treated by a very bland diet, by allowing ice or cold water freely, by giving frequent doses of the bicarbonate or chlorate of potash, by administering purgative enemata, and by warm fomentations or poultices to the epigastrium. Dr. Condie recommends one-sixth to one-half of a grain of calomel every one or two hours, when the disease is very acute; a remedy which he says suspends very promptly the irritability of the stomach, and produces a favourable change in the symptoms generally. It may be mixed with a few grains of gum or sugar, and laid upon the tongue.

3. Softening of the Stomach.—In studying the morbid anatomy of diseases of the stomach care must be taken not to mistake the alterations which this organ sometimes undergoes after death from the action of the gastric juice, with the changes of structure due to disease from natural causes, or arising from the use of deleterious agents. John Hunter first taught that the walls of the stomach may be dissolved or digested by the action of the gastric juice after death; and numerous observers have since verified the accuracy of this physiologist's deductions. It was Hunter's opinion, deduced from the observation of cases of accidental death, as well as from experiments on animals, that post-mortem digestion of the stomach was most commonly and most extensively found in persons who had died a violent death; though he remarks, that "there are few dead bodies in which the stomach, at its great end, is not in some degree digested." Spallanzani, on repeating and varying Hunter's experiments, confirmed the general accuracy of his statements, while he also showed that

a certain degree of heat is requisite to develop this solvent power of the gastric juice; and it now seems to be allowed, that the more nearly we imitate the gastric temperature of warm-blooded animals—96° Fah. to 100° Fah.—the more rapidly and extensively will solution occur. At the present time, our knowledge of cadaveric softening of the stomach seems to amount to this: it is more frequent in infancy and early childhood than in adult age; it is most frequently found in hot weather, or when the body has been kept in a warm room; the fundus, or that part to which the liquids in the stomach gravitate from the position of the body, is the most commonly affected; the softening or ulceration is sometimes confined to the mucous membrane, but frequently it extends through the whole of the coats; the excavated patches are of various extent, with thin, soft, irregular, and sometimes fringed edges, thus presenting a marked contrast with the swollen and often abrupt, hardened borders of ulcers; the colour of the blood remaining in the vessels of the stomach is often darkened by the acid of the gastric fluid, giving rise to appearances resembling those produced by chronic inflammation; the softened tissues have an acid reaction, so that they putrify less readily than other parts, owing to the antiseptic virtues of the gastric juice; and lastly, this phenomenon occurs most frequently in cases of accidental sudden death, where food has been taken a short time previously, although it is very often found when death has arisen from disease of the stomach, from phthisis—especially in women, from inflammatory disease of the brain, from typhoid fever, or from disease of any of the abdominal viscera.

The important question which here presents itself for consideration is this:—does softening of the stomach and intestines in the young ever occur during life, from the action of inflammation, or as the result of any specific disease? It is impossible to answer this question positively, since opinions are so evenly balanced on the subject. Rokitansky admits two kinds of softening, one cadaveric, the other pathological; and it is to the latter that he refers softening of the stomach in children, conceiving that it depends upon some specific disease peculiar to early life. Cruveilhier, Billard, and others, seem to agree in the main with this opinion: Bouchut, West, and Elsässer do not allow the existence of this specific disease, but regard the softening so often found in the young as the consequence of changes occurring after death. Although my experience in this matter is not sufficient to give any weight to an opinion, still it may be remarked that I have never met with any instance which would lead me to dissent from the views of these latter authorities. Dr. West justly says,—"The much greater frequency of softening of the stomach and intestines in infancy and early childhood than in adult age, and the greater amount and wider extent of the alterations, have received considerable elucidation from the recent researches of Dr. Elsässer.* He found that a much more rapid action upon animal tissues than that exerted by the gastric juice was put forth by any substance capable of undergoing the acetous fermentation, combined with pepsine. Such substances are furnished by the milk as well as by the various farinaceous and saccharine matters on which infants almost exclusively subsist. The tendency of these substances to undergo the acetous fermentation is checked by the presence of healthy gastric juice, while, as we know by experience, it takes place very readily in infants who are dyspeptic, and to a very remarkable degree in many cases of infantile diarrhœa. Facts bear out to a very great extent the opinion of M. Elsässer. Out of one hundred and four cases of softening of the stomach that came under the notice of two very eminent German physicians, MM. Herrich and Popp, seventy-two were met with in the period of infancy or early childhood."† These views—which seem to bear the stamp of truth—will not find less favour with my readers, because they are corroborative of the opinions of John Hunter.

SECTION III.—DISEASES OF THE INTESTINES.

1. Simple Diarrhœa—Of all the complaints of infancy, relaxation of the bowels is probably the most frequent: it is especially common between the ages of six months and two years,—that is to say, during the process of dentition. To

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* *Die Magenerweichung der Säuglinge.* Stuttgart, 1846.

† *Opus cit.*, p. 458.

account for this, we have only to remember the rapid development of the alimentary canal which takes place during these months, the active evolution of the salivary and intestinal glands, and the sympathy which exists between the irritation in the gums and the intestines.

Symptoms.—The disorder of the bowels varies in degree, in extent, and in its results in every conceivable way. Frequently the looseness is beneficial, and ceases naturally in a day or two. But very slight causes make it pass the limit of health, and especially does unsuitable food do so. Moreover, it is certain that atmospheric influences have not only an exciting effect, but they tend to increase diarrhœa set up by other causes: thus a relaxation of the bowels which would give us no uneasiness in the winter months, may be a troublesome affection in the summer or autumn.

Simple diarrhœa often comes on in a healthy child with an attack of vomiting, the contents of the stomach being first expelled, and afterwards a greenish-coloured mucus. The attack of sickness is quickly followed by relaxation of the bowels; the evacuations at the commencement consisting of healthy fæces, and then of loose, copious, bright-yellow stools. If the looseness continues, the motions assume a green spinach-like appearance, similar to those produced by the administration of mercury; and frequently they contain numerous white specks, consisting of the casein of undigested milk. The general symptoms vary, but commonly they are slight; there may be a certain amount of uneasiness and pain, flatulence, pallor of the face, and a feeling of depression or languor. If a tooth is being cut, the general feverishness will be increased, the appetite will be impaired, and there will be troublesome thirst: while if the diarrhœa persists, it is very likely at this time to lead to extreme exhaustion.

The symptoms usually cease spontaneously, or they readily do so under the influence of medicine. The sickness stops, the action of the bowels becomes less frequent, the fæces get less watery and resume their natural appearance, and in four or five days the patient is well.

Treatment.—An infant not weaned ought to be taken from the breast for twelve hours or so, until the irritability of the stomach ceases; a few teaspoonfuls of plain water or of barley-water being given occasionally to quench the thirst. In an older child all solid food is to be forbidden, and thin arrowroot, made with milk and water, substituted. If the attack be due to improper food, a small dose of castor oil or of rhubarb should be given, to expel any irritating matters that may be left in the intestines: after the action of which a few doses of chalk mixture and aromatic confection, or of logwood and catechu—F. 47, 48—will complete the cure.

In the diarrhœa connected with dentition rather more caution should be used. Thus, the gum should be lanced if it be tense and swollen; a tepid bath should be used if there be much fever; a saline draught, containing an excess of alkali, with a little ipecacuanha and opium—F. 33, 35—may be given every three or four hours; and one grain of Dover's powder, with the same quantity of mercury and chalk, will be necessary at bedtime to relieve restlessness. Care must also be taken to check the looseness by some astringent or sedative—F. 73, 74—unless it ceases under the above treatment; and at the same time, we must be on our guard not to allow the powers of life to get depressed.

2. INFLAMMATORY DIARRHŒA OR DYSENTERY.—Though much more serious than the preceding, yet this disease is in many respects closely allied to it; for it often prevails at the same time, it is to a considerable extent dependent upon the same causes, it is in a measure amenable to the same remedies, and it often seems to result from unchecked simple diarrhœa. Nevertheless the two affections differ more than in degree: for should simple diarrhœa by chance prove fatal, no morbid appearances of any note are to be found, whereas in dysentery they are characteristic and well marked.

Symptoms.—The disease may either arise idiopathically, or be developed out of simple diarrhœa. It sets in usually with urgent vomiting, quickly followed by violent relaxations of the bowels; so that there may be thirty or more evacuations in the course of the twenty-four hours. The stools are at first natural, but soon become slimy and streaked with blood; they are forcibly expelled, and their expulsion is followed by tenesmus. At the end of a few hours the mucous evacuations become more scanty; they are perhaps mixed with separate small lumps of fæces—scybala, and are passed with pain and difficulty; and they either continue streaked with blood, or frequently a few drops of blood—perhaps even one or two teaspoonfuls—follow their passage. These scanty evacuations soon produce distress rather than relief; the patient is constantly tormented with tenesmus and griping; the stools become fœtid, dark-coloured, and mixed with shreds of lymph; and the bladder sympathises with the rectum, giving rise either to strangury or to frequent micturition with high-coloured scalding urine.—Under these circumstances, it cannot be wondered at that the constitutional symptoms are very severe. There is more or less fever; the child is drowsy, but very irritable when roused; it soon becomes very weak; the loss of flesh is rapid, so that in twenty-four hours a previously healthy infant has sunken eyes, sharp features, and shrivelled limbs; the tongue is furred, and the papillæ prominent; pulse quick and small; skin harsh, hot, and dry; thirst urgent; no appetite; dyspnœa; and great prostration.

At the end of forty-eight hours the symptoms abate in severity; the sickness ceases, the bowels act less frequently, the tenesmus continues and produces prolapsus ani, while the thirst remains annoying causing a constant desire for cold water. If the disease does not now yield to treatment, the further course will be uncertain, owing to the frequent fluctuations. It may become chronic and end in death at the end of two or three weeks, or bronchitis may supervene, or signs of cerebral irritation may become manifested. In quickly fatal cases, the abdomen becomes tense, full, and tender, especially on pressure; the pulse gets weaker; the tongue is dry, red, glazed, and aphthous; the evacuations are extremely offensive and watery; hiccup comes on, with great exhaustion and emaciation; and death soon follows.

Causes.—Improper and insufficient food; deficient clothing; cold, close, damp, ill-ventilated dwellings; and defective sewerage, are fertile causes of dysentery. Moreover, it can often be connected with some source or other of malaria; and hence it is frequently endemic in certain localities. It may also prevail as an epidemic: thus in an epidemic of dysentery which prevailed in Dublin, 1222 of the poor inmates of the South Dublin Union Workhouse were attacked, between April 1846 and August 1848; of which number, 127 were male children under ten years of age, 74 of whom died.*

Pathology.—Dysentery consists chiefly in inflammation, followed by ulceration of the mucous membrane of the colon, especially perhaps of the lower part of this gut and the rectum; hence it has been sometimes termed colitis. Cases, however, are occasionally seen in which the morbid action does not stop at the ilio-cæcal valve, but extends for many inches up the small intestines.

Morbid Anatomy.—The morbid appearances found after death do not always correspond with the severity of the symptoms during life; for the former are sometimes comparatively slight, when the disease has been very severe. The results of the morbid action are chiefly found in the large intestine: they are less marked than in the fatal dysentery of adults. In all cases, however, there are evidences of inflammation in the colon; the mucous membrane being red, swollen, and often softened; covered with numberless dark specks, consisting of the enlarged orifices of the solitary glands; and frequently having the glands themselves enlarged, and projecting like millet-seeds above the level of the surrounding tissue. If the inflammation has gone on to ulceration, numerous cup-like depressions or ulcers are found, the base of the ulcer being formed of the muscular coat of the intestine; while the mucous membrane on the prominent surfaces of the intestinal rugæ is also destroyed, particularly in the sigmoid flexure of the colon and in the rectum. If the ileum has been involved, the mucous membrane of the inflamed portion—especially that part near the ilio-cæcal valve—will be found vascular and thickened, and having a velvety look. Occasionally Peyer's glands are affected. The mesenteric glands are usually healthy, or only very slightly enlarged, and perhaps reddened.

In the paper by Dr. Mayne, to which reference has already been made, this gentleman states that in the majority of those who died within three weeks from the commencement of the disorder, the large intestine was found the principal seat of the organic mischief, and in the majority of such cases it was the only part engaged. The morbid appearances generally extended from one end to the other of this portion of the intestinal tract, the lower parts of the canal being the most intensely affected. There was also an undue degree of vascularity of the peritoneum covering the diseased portions of the canal; the absorbent glands along the same part were congested and enlarged; the walls of the intestine were thickened and indurated; while its mucous membrane varied in colour from a bright red to green or purple, and was in some cases covered with a bran-like exudation, in others ulcerated. The ulcers were sometimes small and isolated, in others—superficial and extensive, and in a third variety—large, irregular, ragged, and penetrating. The small intestines were generally healthy; and the liver was sometimes much congested.

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* *Observations on the late Epidemic Dysentery in Dublin*, by R. Mayne, M.D., in the *Dublin Quarterly Journal of Medical Science*, p. 294, vol. vii. 1849.

Treatment.—When the disease sets in violently with considerable tenderness of the abdomen, great relief will be experienced from placing the child in a hot bath, to the water of which a decoction of poppy-capsules has been added: and the ease will probably continue if the abdomen be afterwards well fomented, or covered with a hot linseed-meal poultice, or with a large bran poultice. If the stomach be not too irritable to allow of the administration of medicine, a small quantity of castor oil and tincture of opium in mucilage—F. 46—should be given: and when the symptoms are relieved after two or three doses, an opiate enema may be advantageously administered—F. 74—to quiet the tenesmus, and irritability of the bladder. Where the vomiting will not allow any medicines to be retained, a quarter of a grain of calomel with the tenth of a grain of opium may be laid upon the tongue every three hours: and at the same time the child may be allowed to drink freely of cold water, while its diet is restricted to milk and water, or even to barley-water. In such cases also I have found it advantageous to wash out the rectum with warm water, and then to inject an opiate enema. I have not employed the enema of nitrate of silver—gr. j. to distilled water ℥j.—so strongly recommended by M. Trousseau; but I should do so if the diarrhœa proved intractable. In the epidemic described by Dr. Mayne, no medicine was so useful as mercury given early, in small doses rather than large ones, and continued until the evacuations exhibited a beneficial change, or until salivation occurred. Next to mercury, alkaline medicines were most beneficial; the liquor potassæ, or limewater, with a small quantity of opium were found very soothing. Opium in full doses aggravated the disease; purgatives were rarely useful; the bitartrate of potash in large doses failed; turpentine was of little use, except in cases of relapse; and ipecacuanha was perfectly ineffectual.

In the majority of cases stimulants will be needed, but judgment is requisite as to the time when they should be commenced. The practitioner should watch every case of dysentery narrowly, visiting his patient at least every eight hours; for symptoms of great exhaustion often come on very rapidly, and due support must then be afforded. The stimulant I commence with is port wine, made into warm, sweet, slightly-spiced negus: and when the depression is accompanied with irritability of the nervous system—which must not be mistaken for cerebral inflammation—a drop of Battley's liquor opii is added to the wine and water at intervals of three or four hours, according to the patient's age and condition. Should symptoms of extreme debility supervene, brandy —in half-drachm or drachm doses, mixed with milk or arrowroot—is to be administered; the dose being repeated every two or three hours, or even every hour, according to the degree of prostration. In such cases, also, I have found the Mistura Spiritûs Vini Gallici of the Pharmacopœia very useful.

When the inflammation is declining, and the looseness of the bowels seems about to degenerate into chronic diarrhœa, aromatic astringents, or gallic acid and cinnamon, or sulphate of iron and opium—F. 45, 47, 48—are very valuable. Now also fluid nourishing food—such as strong broths free from salt, beef-tea and isinglass, milk, and arrowroot—may be allowed; but great care must be taken to prevent the use of solids, inasmuch as relapses are very apt to occur, and are especially induced by anything which irritates the ulcerated intestinal mucous membrane. Through the whole progress of the case the practitioner must insist that the patient be kept dry and clean: and some oxide of zinc, or zinc ointment, should be applied to the groins and folds of the buttocks after each ablution. Careless nurses often merely dry the infant's soiled napkins without having them properly washed after they have been once used: such an injurious proceeding must not be tolerated.

As the disease quite subsides, tonics, good diet, the use of the tan bath—F. 92—and change of air, will aid in quickly restoring the flesh and strength. It not unfrequently happens that convalescence is retarded, and the debility kept up, by the child's disgust for food. Fortunately we have two or three remedies, to one or other of which we may resort, with every prospect of overcoming this difficulty. *Pepsine* will be valuable in those instances where the loss of appetite appears to be due to the insufficient secretion of gastric juice: it may be given in doses of six to ten grains with the two or three chief meals of the day. Professor Weisse,* of St. Petersburgh, first recommended the use of *raw meat* in the diarrhœa whic often occurs during weaning: and many German physicians speak highly of its effects. About two teaspoonfuls of finely-chopped beef or mutton may be given daily to a child one year old: and if it crave for more, and evidence is afforded of its digestion, the quantity may be increased. It is very remarkable that debilitated children who refuse all other kinds of food will eagerly take this; but as the strength is regained, the desire for it passes away. The third remedy to which we may have recourse is *prepared bullocks' blood*, which has however failed in my hands to be of any benefit. This failure may have been owing to the way in which it was prepared, for in its dried state it seemed to resemble charcoal. Consequently I shall again try it in a different form, since it possesses the advantage over raw meat of not by chance containing the cysticercus cellulosæ; which, when introduced into the human intestines, probably undergoes its higher metamorphosis into the tape-worm.

3. CONSTIPATION.—This is rather a symptom of many different

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* *Journal für Kinderkrankheiten*, herausgegeben von F. J. Behrend und A. Hildebrand, vol. iv., p. 99. Berlin, 1845.

diseases, than an idiopathic affection. Sometimes, however. the most careful examination fails to detect any malady, with the exception of a sluggishness of the bowels; which often induces flatulence, colic, a furred tongue, general restlessness, and loss of appetite. This condition may be at least temporarily removed by gentle laxatives, such as manna, syrup of violets, magnesia, castor oil, &c.; or where the constipation seems to be due to the difficulty of passing hardened fæces, by the employment of inspissated ox-bile. Since reading Corvisart's views on the action of pepsine, I have rather extensively used this remedy; which may be given to the youngest infant in doses of three to six grains dissolved in milk twice daily.* It seems to relieve constipation in the same way that it checks some forms of diarrhœa, by enabling the stomach to do its work thoroughly.

4. MECHANICAL CONSTIPATION.—By this term I mean that form of constipation induced by some mechanical obstacle, such as the *strangulation of an external hernia*, or the *invagination of a portion of intestine*. With regard to the *first*—it need only be mentioned that although infants and young children not unfrequently suffer from hernial protrusions, yet it very rarely happens that the intestine becomes strangulated. The mere fact, however, that such an occurrence may take place, even in an infant only a few days old, renders it necessary that in every case of obstinate constipation, with vomiting, pain, &c., the practitioner should early and carefully examine the umbilicus and the inguinal regions, in order to satisfy himself that there is no strangulated hernia. If he discover one, and the taxis—aided by the relaxing effects of chloroform—fails to reduce it, an operation must be promptly performed to relieve the strictured gut.

The *second* cause of mechanical constipation—invagination of a portion of the intestine—is not uncommon in the young. It is frequently found in the bodies of infants who have died from diseases unconnected with any intestinal affection; and in such, the invagination or intussusception probably occurs during the act of dying, under the influence of the peristaltic movements of the intestine induced by extreme suffering. A single intussusception may exist, or there may be several: the small intestines are alone affected, and in by far the greater number of cases it is the ileum.

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* *Dyspepsie et Consomption—usage de la Pepsine.* Paris, 1854. See also a pamphlet by Dr. Ballard—*On Artificial Digestion, &c.* London, 1857.

When intussusception occurs during life as an idiopathic disease, it is generally in infants under one year of age: though why it should be so cannot be explained. A portion of the intestine slips or is drawn down into the continuous inferior part – just as the finger of a glove is drawn back on itself; and the inflammation and swelling which arise, increase or complete the obstruction. In the course of a few hours this state is made manifest by certain important symptoms, such as—vomiting, constipation, tenesmus, and severe attacks of colic as indicated by loud and violent cries. In some fortunate instances these indications of invagination cease, the child has a natural motion, and gets well: and it is not improbable that Nature has reduced the intussusception and effected a cure. Cases are also related in which the invaginated portion has sloughed off, and been discharged in the stools; although this mode of cure is especially uncommon in the young. But the affection may continue; and then we find that the child's strength rapidly fails, the pulse becomes very feeble, the countenance anxious, and the extremities cold. Moreover there may be vomiting of fæcal matters; tenesmus, with a discharge of bloody mucus, often sets in; and tumefaction of the abdomen, with perhaps the formation of a distinct elongated tumour over the seat of the intussusception may be detected. Death may occur from exhaustion, or from the supervention of convulsions.

In the *treatment* of mechanical constipation we at first resort to the use of purgatives, and purgative enemata. Directly we are convinced, however, that there is some mechanical obstruction, our plan must be altered; for under such circumstances aperient medicines are poisons. Opium is then our sheet-anchor; but it must be given with all the caution which the use of this drug demands in the young. At the same time we may gently throw up large quantities of warm water by means of an elastic catheter fitted to a syringe; or if there be no great amount of tympanitis, we may try the injection of air. Supposing these means fail, is any surgical operation justifiable? Without recommending the proceeding, I think I should venture to make an exploratory incision into the abdomen, in an apparently hopeless case. The misfortune is, however, that if the intussusception have existed many days, it is not improbable that the peritoneal surfaces of the gut which have been brought into such close contact, may have formed firm adhesions; and hence the great danger of the operation would be further increased by the necessity for rupturing these. Moreover, it must also be remembered that gangrene sometimes results from intestinal invagination; and then any operation would be worse than useless.

5. INTESTINAL WORMS.—There are five entozoa—εντος, within, and ζωον, an animal—occasionally found inhabiting the intestinal canal; of which three possess an alimentary tube, and are therefore called hollow worms, or *Cœlelmintha*—κοῖλος, hollow, and ἕλμινς, a worm; and two which have no abdominal cavity, and are hence termed solid worms, or *Sterelmintha*—στερεὸς, solid, and ἕλμινς.

In the first class we have,—

a. The Tricocephalus Dispar, or long thread-worm, usually found in the cœcum and large intestines, measuring about two inches in length, and having a very slender body. It is often found in considerable numbers, even in the intestines of healthy persons: during life they give rise to no symptoms.

b. The Ascaris Lumbricöides, or large round-worm, is found in the small intestines, especially of ill-fed children. It somewhat resembles in size the common earth-worm, varies in length from six to nine inches, and is of a light-yellow colour. The symptoms which it may possibly give rise to, are—thirst, disturbed sleep with grinding of the teeth, pallid countenance, dilated pupils, bluish rings beneath the eyelids, fœtid breath, swelled belly, emaciated extremities, depraved appetite, slimy stools, itching of the nose, tenesmus, and itching of the anus.

c. The Ascaris Vermicularis, or small thread-worm, is found in the rectum, and is the smallest of the intestinal worms, averaging usually about a quarter of an inch in length. It gives rise to intolerable itching and irritation about the anus, tenesmus, depraved appetite, picking of the nose, offensive breath, and disturbed sleep.

In the second class we find,—

a. The Tænia Solium, or common tape-worm of this country, which exists in the small intestines, varying in length from five to ten feet, and in breadth from one line—at its narrowest part—to four or five at its central or broadest portion. The head of this parasite is small and flattened, having in its centre a projecting papilla armed with a double circle of hooks, around which are four suckers or mouths, by which nourishment is imbibed; the generative apparatus consists of a ramified canal or ovarium containing the ova, and occupying the centre of each joint. The symptoms of its presence are not very striking, its existence being generally unsuspected until single joints are passed in the stools; in many cases, however, there is a continual craving for food, debility, pain in the stomach, emaciation, and itching about the nose and anus.

b. The Bothriocephalus Latus, or broad tape-worm, is almost peculiar to the inhabitants of Switzerland, Russia, and Poland. It differs from the common tape-worm in having its segments of a greater breadth than length. The extreme fertility of the *Bothriocephalus latus* may be understood by considering that each foot of the well-developed worm contains 150 segments or joints, each joint possessing its own ovary and male organs. Hence each joint is fertile; and as each ovary would produce 8,000 ova, it may be calculated that ten feet of such a worm would produce the enormous number of 12,000,000. They are very rarely met with in this country, but they are so occasionally. Professor Owen, examining the collection of a worm doctor in Long Acre, found three specimens; two had come from persons who had been in Switzerland, but of the third nothing was known.

If, for the sake of convenience, we tabulate these entozoa according to the parts they inhabit, we shall have,—

Small intestines . .	Ascaris lumbricöides, or round-worm. Tænia solium, or common tape-worm. Bothriocephalus latus, or broad tape-worm.

Large intestines . .	Tricocephalus dispar, or long thread-worm.
	Ascaris vermicularis, or common thread-worm.

Treatment.—We have several remedies for the round and tape-worms; such as—the oil of turpentine, scammony and jalap, compound jalap-powder with calomel, the bark of the pomegranate root, the kousso, and the oil of male fern. I am in the habit of trusting to the latter, which I thus administer. On the first morning I commence with a dose of castor oil or a Seidlitz powder, and during the day keep the patient on very low diet, only allowing a little good beef-tea. At night the purgative is repeated; and thus the worm or worms get thoroughly uncovered by the removal of the contents of the alimentary canal, and therefore receive the full benefit of the —to them poisonous—dose of oil of male fern, which is taken the first thing on the following morning, according to—F. 19. By this means, perhaps twice repeated, I seldom fail to remove the whole worm, including the head. To prevent its re-formation, tonics should be given; especially the mineral acids in infusion of quassia, or the tincture of the sesquichloride of iron with tincture of aloes, &c.—F. 17. The patients should also be directed to take plenty of salt with their food; and to avoid pork and all imperfectly-cooked meats.

The ascarides may generally be killed by enemata of infusion of quassia, or of common salt, or of lime-water, or of the tincture of the sesquichloride of iron—in the proportion of half an ounce to half a pint of water.

It need hardly be mentioned that none of these remedies ought to be resorted to, unless we are quite certain that the child is affected with some verminous affection. The general symptoms are in all cases untrustworthy, since none of them are peculiar to helminthiasis; moreover, when worms are present in the intestinal canal, distinct evidence can almost always be obtained by examining the evacuations, inasmuch as portions of them are most likely to pass away. Lastly, it may be added, that I have never met with a verminous affection in an infant confined to the breast: although it is said that worms have been found even in the intestines of the fœtus.

6. Prolapsus Ani—not unfrequently occurs as a consequence of the tenesmus in inflammatory diarrhœa, or from the abuse of purgative drugs, or it may follow from the straining requisite to pass hardened fæces after prolonged constipation. Generally, as the cause of the protrusion is removed, so the affection ceases; but such is not always the case. Hence the practitioner should be prepared to recommend appropriate remedies for its cure. Perhaps the best plan is to insist that the little patients shall pass their evacuations while lying on the back, in which position the bowel rarely descends, as it is impossible for much straining to be exerted. Or the nurse may be directed to support the margin of the anus with her fingers, during defæcation; provided the child is not old enough to do so for itself. Then if the rectum or its mucous membrane still prolapse, the nurse is to be taught to gently return it; and if necessary a bandage and compress must be applied to keep the parts in their normal position. Tone should in all instances be imparted to the relaxed tissues by the use of astringent injections; such as, infusions of oak bark or of rhatany, or solutions of alum or of sulphate of iron—gr. ij.-vj. in water ℥j. In one obstinate instance under my care, a cure was effected by the free application of the solid nitrate of silver, but this is seldom necessary. Ferruginous tonics, quinine, or the mineral acids, may also be administered internally; and the regular action of the bowels ought to be insured by the frequent use of mild, unirritating laxatives, or by the occasional exhibition of a good dose of calomel and rhubarb, as advised by Sir Benjamin Brodie.

SECTION IV.—PERITONITIS.

1. Acute Peritonitis.—Acute inflammation of the peritoneum is not a very common idiopathic affection at any period of life, but fortunately it is still more rare during childhood. There seems to be abundant evidence, however, that it is occasionally a disease of intra-uterine life; in which case it is possibly due to some syphilitic taint. It may cause

the death of the fœtus; or the infant may be born suffering from the morbid action.

Symptoms.—When idiopathic peritoneal inflammation is set up in a child, the symptoms are much the same as those which are developed in the adult; but when the peritonitis is the secondary disease, then the diagnosis is more difficult, inasmuch as the symptoms are often obscure in the commencement and are generally masked by the primary affection. The earliest and most prominent indication of peritonitis in both instances, is the severe suffering which is produced; the pain being at first confined to a part but afterwards extending over the whole abdomen, and being accompanied by great fever and constitutional disturbance. Moreover the pain is aggravated by any movement which calls the abdominal muscles into action, or by pressure—even the weight of the bedclothes being insupportable: the little patient consequently lies quiet on his back, with his knees bent, and legs drawn up. The abdomen is also tense, hot, and frequently tympanitic; the bowels are constipated; there is often nausea and vomiting; the skin is hot and dry; the pulse, small, rapid, and weak; the respirations hurried, short, incomplete, and jerking; the tongue furred; and the countenance is expressive of suffering, and great anxiety. After a time the belly ceases to be tympanitic, but remains somewhat enlarged from the effusion of serum. When a fatal termination is approaching, the abdomen often becomes much distended, the pulse very quick and weak, the countenance ghastly, and death occurs from exhaustion.

Treatment.—Hot anodyne fomentations, mercury, and especially opium—in as large doses as the child will bear—are the remedies on which I would advise the practitioner to rely. Of course general and local bleeding is usually recommended; but the true physician will think for himself, and take all the circumstances of the case into consideration, before resorting to depletion. The best mode of getting the system under the influence of mercury will be through the cutaneous absorbents: two or three drachms of mercurial ointment are to be spread on muslin, and then laid upon the abdomen underneath the fomentation flannels. Where the sufferings are not relieved by opium I should not hesitate to keep the patient for some hours under the influence of chloroform. In all cases, purgatives do the greatest mischief.

The diet must consist, at first, of barley-water, or iced water only; should the patient become very low, great good may be effected by the judicious use of wine and strong beef-tea. In curing the inflammation, care must be taken not to let the sufferer die from exhaustion.

2. CHRONIC PERITONITIS.—Chronic inflammation of the peritoneum is sometimes the sequel of acute, but more frequently an independent affection.

M. Louis is of opinion that this disease, when not following acute inflammation, is always complicated with strumous tubercles. In many cases, certainly, the lungs and bronchial glands contain a greater or less amount of tubercle; the intestines are matted together by lymph and tubercular deposits; and the peritoneum is beset with small granulations or patches consisting of the same material. But these appearances are not universal. Dr. Hodgkin says—"My own inspections would lead me also to the conclusion that chronic peritonitis is very frequently conjoined with tubercles; yet this concurrence has not been so uniformly supported by cases observed in this country, as it has been by Louis's cases. That form of peritonitis which is accompanied by copious effusion, and which might easily be regarded as ascites, occurs without any appearance of tubercles. The same may be said of other cases in which the concrete product of inflammation had been more considerable."*

The *symptoms* are somewhat obscure, the abdominal pain being slight, and the constitutional symptoms variable. Usually, the health gradually fails, the appetite becomes capricious, occasional attacks of abdominal pain take place, the bowels are alternately relaxed and constipated, the sleep is disturbed, and the skin is found hot and dry at night. After a time, effusion of fluid takes place, the abdomen enlarges, and perhaps fluctuation is felt; while the superficial veins of the abdominal parietes are seen full and prominent.

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* *Lectures on Morbid Anatomy of Serous and Mucous Membranes*, vol. i., p. 149. London, 1836.

Then the patient rapidly loses strength, becomes much emaciated, and has constant diarrhœa: and death either occurs from exhaustion, or from some intercurrent tubercular affection.

The *treatment* must consist in attention to the bowels, in allowing a mild but nutritious diet, and in employing fugitive blisters or stimulating liniments to the abdomen ; iodine paint and the iodine ointment may be recommended. I think I have seen benefit also, from the internal use of iodine, from different preparations of steel, and from cod-liver oil. These cases are, however, most unpromising.

SECTION V.—TABES MESENTERICA.

Tabes mesenterica is the name given to a tubercular or strumous degeneration of the mesenteric glands: it might be termed abdominal phthisis, were it not for the tubercular nature of some forms of chronic peritonitis, which could also claim this title.

The mesenteric glands are so small at birth that they can scarcely be distinguished. But about the period of dentition they gradually become more developed, in common with many of the other glands of the body: and it is at this period that they often take on diseased action—forming the seat of tubercular deposits, especially in strumous, badly-tended, and imperfectly-nourished children. The liability to tabes mesenterica may be said to continue chiefly from the eighth month to the eighth or tenth year.

Symptoms.—The symptoms bear a strong analogy to those which have just been described as significant of chronic peritonitis. They principally consist of pain in the bowels, more or less constant, sometimes severe, causing the child to keep his legs drawn up towards his belly. The lips are of a deep red, and the angles of the mouth are covered with small ulcers, or the whole lip is fissured. The bowels are variable, though generally relaxed ; the motions are often unhealthy, of a light clay colour, and extremely fœtid. The abdomen is swollen and tense, while the other parts of the body waste away, until an extreme degree of emaciation exists—hence the name *tabes ;* there is great pallor, and general debility which increases rapidly. The enlarged glands in the mesentery can sometimes even be felt through the attenuated abdominal parietes, when the disease has become thoroughly established. Obstinate diarrhœa often sets in, with hectic fever, &c. Symptoms of pulmonary consumption may supervene, or the irritation of the enlarged glands may produce acute and fatal abdominal inflammation, or the child may die worn out by the disease, unless remission takes place. When recovery does fortunately occur, the period of convalescence is protracted; and great caution will be required, during its progress, to shield the patient from relapses as also from all contagious and other infantile disorders.

Treatment.—This must consist in the use of mild nourishing food adapted to the child's age and strength; asses' milk and farinaceous preparations being very useful. Cod-liver oil will be of much use in all cases, especially when given with vegetable tonics: the syrup of iodide of iron is also often valuable. In some instances benefit seems to have been derived from minute doses of the bichloride of mercury, dissolved in the decoction of sarsaparilla or in infusion of bark; or from alterative doses of the hydrargyrum cum cretâ with Dover's powder; or from the gentle inunction of small quantities of mercurial ointment. Change of air—especially to the sea-side, warm or tepid salt water baths, and good animal food—provided it can be digested, will often work wonders.

SECTION VI.—DISEASES OF THE LIVER.

1. **Jaundice.**—Icterus or jaundice is rather a symptom of some affection of the liver, than a separate disease. It is a condition at once recognised by the yellow hue of the skin and conjunctiva, by the dark-saffron tint of the urine, and by the white or light clay colour of the intestinal evacuations.

Infantile jaundice—icterus neonatorum—is generally a common trivial disorder, occurring a few days after birth, and usually disappearing gradually and spontaneously in about a week. It is most common in immature and feeble children, and is most intense in infants affected with sclerema and pulmonary atelectasis: it is probably unconnected with any primary affection of the liver, but is a secondary hepatic disorder due to defective respiration, to breathing a cold or vitiated air, or to imperfect performance of the functions of the skin.

Besides these simple cases, jaundice does sometimes depend on more serious causes; as on congenital absence of the hepatic or cystic biliary ducts, or on obstruction of these ducts by inspissated bile. In these fatal cases there is a strong tendency to hæmorrhage which often occurs from the umbilicus just about the period of the separation of the funis. If the bleeding be controlled and life prolonged, general atrophy usually comes on; followed by exhausting diarrhœa, and death at the end of two or three weeks.

During childhood, jaundice may occur and have its origin from the same conditions as give rise to it in the adult. Thus it may be produced in two ways:—1st, By some temporary impediment to the flow of bile into the duodenum, and the consequent absorption of the retained bile; and, 2nd, by defective secretion on the part of the liver, so that the principles of the bile are not separated from the blood.

The most common impediment to the flow of bile into the duodenum, is the impaction of one or more *gall-stones* in the ductus communis choledochus. These concretions consist of inspissated bile, and chiefly perhaps of cholesterine—a peculiar substance, which exists in a state of solution in healthy bile, but which, under certain circumstances, becomes released from its solvent, and assumes its natural crystalline form. In all cases the nucleus of the concretion consists of a small piece of solid biliary matter, or of inspissated bile cemented by mucus. When the obstructing stone or stones have passed into the duodenum, they are voided with the fæces; and the cause of the jaundice being removed, the skin gradually assumes its natural colour. The other causes of jaundice from obstructed gall-ducts are, cancer of the liver or pancreas, closure of the ducts from adhesive inflammation of the liver, from spasm of the ducts, and from constipation, the loaded intestine pressing upon the duct, and so impeding the flow of bile. The secretion of bile may be suppressed or rendered defective by congestion and inflammation of the liver; by mental shocks, or grief, or fits of anger; by certain poisons in the blood; and by certain disorders of the stomach.

Treatment.—In the simple cases nothing will be needed beyond attention to the clothing of the infant, keeping the air of its apartment pure and warm, and perhaps the administration of a dose or two of some mild laxative. If the mother be unable from any cause to suckle her offspring, a strong healthy wet-nurse must be procured.

The other varieties of jaundice will have to be treated on principles varying with the nature of the cause. Where there is congenital absence of the hepatic or cystic biliary ducts, all attempts to materially prolong life will be unavailing; hence we must be content with alleviating as far as possible any distressing symptoms that may arise. In jaundice from the obstruction of gall-stones, hot baths, warm fomentations, hot alkaline drinks, saline purgatives, and sedatives are the remedies on which to rely: while when the diagnosis points to defective secretion as the cause of the disturbance, we may perhaps cautiously try mercury, or taraxacum, or the nitro-muriatic acid in small doses; but in most instances, as we shall be merely working in the dark, it will be better to rest contented with saline purgatives, diaphoretics, baths, rest, and regulated diet.

2. STRUMOUS ENLARGEMENT OF THE LIVER.—Inflammatory affections of the liver are so very rare in the young, that it is unnecessary to describe them in these pages. A peculiar enlargement of this gland, however, not unfrequently occurs in feeble, delicate children. The abdomen gradually enlarges, so that the little patient is said to be "pot-bellied;" and on examination one or more well-defined tumours are discovered. These tumours are formed by the enlarged liver, with perhaps an enlarged spleen; the increase in size in both cases being due to the interstitial deposit of albuminous matter. As this foreign matter is soft, and has no tendency to contract like the lymph poured out in ordinary inflammation, it does not much impede the passage of the blood through the liver, or the escape of the bile through the ducts; and hence it very seldom gives rise to serious disturbance. Should the same material, however, become deposited in the structure of the kidneys, then the functions of these glands become so completely interfered with, that the cases cease to be amenable to

treatment; and albuminuria, ascites, and anasarca ensue, and death ultimately results.

The peculiar condition just described is probably the consequence of a scrofulous or syphilitic cachexia. In its highest degree, in the liver, it is most frequently found—according to Dr. Budd—in young persons who have long suffered from scrofulous caries. Occasionally, however, there is no disease of the bones, but the patient is much wasted by scrofulous disease. The following case—related by Portal [*]—may be quoted as a characteristic example:—A boy, eight years of age, gradually became extremely emaciated. The submaxillary glands were enlarged, and on each side of the neck was a string of enlarged cervical glands: the liver extended low in the belly. The child was in a slow fever, had a great distaste for all kinds of food, and died a fortnight after he was first seen by Portal. On dissection, the maxillary glands, the glands on each side of the neck, and the bronchial and mesenteric glands were found enlarged, and filled with a substance like plaster. The liver was of a prodigious size: when stripped of its capsule, the substance appeared whitish; in the interior it was still whiter than on the surface. On the surface, as well as in the interior, were lymphatic vessels containing a substance so thick that they formed small hard cylinders. The matter with which the liver was gorged had the same whiteness. A slice of the liver, exposed to heat, to the action of boiling water, or to that of alcohol, was hardened like albumen.

When only the liver and spleen—either separately or together—are affected, proper remedial measures do great good; and it is probable that under their use the hypertrophy will diminish or perhaps disappear. As, in all cases, there are obvious indications of a scrofulous habit, our treatment must be directed to the improvement of the general nutrition. A digestible nourishing diet, sea air, and tepid salt-water baths, will be of the greatest benefit; especially if, at the same time, the iodide of potassium be administered in combination with steel—F. 40. If there be any signs of a depraved appetite—of pica, as it is called—the little child must be prevented from indulging its morbid fancies; while attempts are made to restore the healthy functions of the stomach by giving small doses of pepsine with those meals at which animal food is taken.

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[*] *Observations sur les Maladies du Foie*, p. 94. Paris, 1813.

3. HYDATID TUMOURS OF THE LIVER.—Hydatid tumours are found in the liver more frequently than in any other organ. They are most common between the ages of twenty and forty; but they may occur at any age from six years to fifty. Dr. George Budd states that he has found no instance recorded in which such a tumour occurred under the age of five or six, or above that of fifty-two.*

An hydatid tumour consists of a sac, lined by a thin bladder or cyst, and filled with a limpid, colourless fluid; floating in which, numerous small cysts, similar to the cyst lining the sac, and varying in size from a pea to a pigeon's egg, are usually found. To these cysts or bladders Laennec gave the name acephalocyst—a bladder without a head. The acephalocyst lining the sac is composed of finely-laminated, friable coats, about the firmness of coagulated albumen. Sometimes it contains no floating hydatids, or very few; in other cases it is literally crammed with them; and these again, it is said, may contain another generation. To distinguish these different kinds, as well as to mark the mode of their increase, naturalists have divided these productions into two species: 1st, the *acephalocystis endogena* of Kuhn, likewise called *socialis*, *vel prolifera* by Cruveilhier, the *pill-box hydatid* of Hunter, which is the kind most commonly developed in the human subject, and in which the fissiparous process of generation takes place usually from the internal surface of the parent cyst, the progeny being sometimes successively included; and, 2nd, the *acephalocystis exogena* of Kuhn, *eremita*, *vel sterilis* of Cruveilhier, which developes its progeny generally from the external surface, and is found in the ox and other domestic animals. The true nature of these acephalocysts has long been a subject of investigation. M. Livois seems, however, to have settled the question by his discovery that they are the dwelling-place of those minute animalcules, to which Rudolphi gave the name *echinococcus*, from the cylinder of hooks surrounding the head. M. Livois states that echinocci exist in all acephalocysts, and this observation has been confirmed by Dr. Budd and other observers.

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* *On Diseases of the Liver.* 2nd ed., p. 438. London, 1852.

Symptoms.—When an hydatid tumour forms in the liver, its growth is generally slow. It gives rise to little inconvenience beyond a sensation of weight, so that its presence is often not suspected until found after death. When the tumour is of large size, it may then be easily felt; sometimes it compresses the portal vein or vena cava, producing ascites and oedema of the legs. It may burst into the peritoneum—causing fatal peritonitis, or into the lung, or into the intestines, or through the abdominal wall; in the two latter cases, the contents will often be entirely discharged, and the sac ultimately closing up, will leave the patient well. When the tumour opens into the lung, the patient becomes so worn out with the constant expectoration of hydatids and puriform matter, and the constitutional disturbance is so severe, that he generally sinks under it.

Sometimes an hydatid tumour gets well without opening, namely, by the secretion of a thick putty-like matter within its sac, owing either to the destruction, or at all events causing the destruction, of the hydatids.

Treatment.—Two agents, iodide of potassium and common salt, are supposed to possess the power of stopping the growth of these tumours. Confirmatory evidence is still required, however, to prove conclusively the value of these remedies.

CHAPTER XIX.

DISEASES OF THE URINARY AND GENITAL ORGANS.

SECTION I.—ACUTE DESQUAMATIVE NEPHRITIS.

ACUTE desquamative inflammation of the kidney is very rarely seen in early life as an idiopathic affection; but it is far from uncommon as a consequence of scarlatina.—Chapter XII., section 6.

Symptoms.—This renal affection, whether produced by the poison of scarlatina, or of cholera, or simply from cold, is attended by the same symptoms. It commences usually with rigors or chilliness, followed by feverish reaction, headache, restlessness, pain and tenderness in the loins, and often vomiting. In most cases, but by no means in all, there is dropsy; and usually this is an early symptom. The face first becomes puffy, followed by general swelling of the areolar tissue throughout the body, and by effusion of fluid into one or more of the serous cavities. At the same time there is frequent desire to pass urine, which is scanty, of a dark smoky colour, and on being tested by heat and nitric acid, is found to be highly albuminous. Examined microscopically, it is seen to contain masses of coagulated fibrin, blood-corpuscles, epithelial casts and cells, and occasionally crystals of lithic acid. When the progress of the case is favourable, the earliest signs of improvement are the disappearance of the dropsy and an increase in the quantity of urine. It is not uncommon for a patient, during convalescence from acute desquamative nephritis, to pass from four to six pints of urine in the twenty-four hours; the natural quantity averaging only—in the adult—from a pint and a half to two pints.

Treatment.—In seeking to cure acute inflammation of the kidney, we have to remember, as Dr. George Johnson remarks,—"that there has been, first, a morbid condition of the blood, which has excited disease in the kidney, and that, as a secondary consequence of the renal disease, the blood has become contaminated by the retention in it of urea and other excrementitious matters."* Our object of treatment must therefore be to rest the kidney, and to purify the blood by means of the other excretory organs. To carry this object into practice, the patient must rest in bed, in a moderately warm room; low diet; plenty of simple drink—water or barley-water; and, in order to get the skin and bowels to act freely, the hot-air bath, or hot-water bath must be used, diaphoretic medicines—F. 33, 35—administered, together with saline purgatives—F. 3, 8, or 15. When the urine is highly albuminous and scanty, the pain in the back severe, and the head seems affected, Dr. Johnson thinks the most valuable remedy is cupping on the loins; two or three ounces of blood being as much as should be taken from a child four years of age. Having treated several cases of this disease, however, without resorting to cupping, and having cured myself of this form of nephritis succeeding to scarlatina without losing an ounce of blood—indeed I had a strong conviction that in my own case loss of blood would have been loss of life—I cannot recommend this practice. It is only necessary to say that diuretics should, under no circumstances, be had recourse to in this disease. As recovery advances, great care must be taken to avoid exposure to cold; and all errors in diet should be rigidly guarded against.

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* *On the Diseases of the Kidneys*, p. 126. London, 1852.

SECTION II.—CANCER OF THE KIDNEY.

Cancer is probably the rarest form of renal disease. Dr. Walshe has collected forty cases of cancer of the kidney from different sources. In thirty-one of these, pure encephaloid—or one of its varieties—was the species of cancer observed, while there were only five cases of scirrhus. The disease affected both organs sixteen times, the right alone thirteen times, the left alone six. Out of thirty-one of the cases, two occurred in children under two years of age. The *Transactions of the Pathological Society of London* contains the report of a case of cancer of the kidneys ending fatally at the age of thirteen months; in which, after death, the weight of the two kidneys was found to amount to five pounds.* Cancerous degeneration, like many other forms of renal disease, commences usually in the cortical substance, and thence extends to the medullary cones and to the walls of the pelvis and ureters. The *symptoms* are often insignificant: the chief are—pain, increase in size of kidney—as may be felt through the abdominal walls, hæmaturia, and possibly the passage of urine containing pus and encephaloid pulp. The *treatment* must consist in palliating the effects of the disease, in relieving pain by fomentations and sedatives, and in supporting the strength.

SECTION III.—INFANTILE DIURESIS.

An increased flow of urine in young children—as in adults—is a symptom of very various diseases. Thus, the disturbance of the functions of the kidneys may be merely a secondary affection, arising from gastric and intestinal disorder; or it may be associated with the tuberculous cachexia; or it may be due to true diabetes,—though so uncommon is this disease in the young, that Dr. Prout, out of nearly seven hundred cases, only saw one in a child under five years of age, while Dr. West has never seen a single instance at the same period of life.

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* Vol. i., p. 119. London, 1847.

There is, however, a remarkable form of diuresis, which has been described by Dr. Prout [*] as not uncommonly occurring soon after the period of weaning. The *symptoms* are as follows:—From having been to that time healthy, the child begins to get dull and inactive, and to daily lose flesh; the skin feels harsh, dry, and hot; the bowels become irregular; the motions assume an unnatural greenish appearance; and the abdomen becomes prominent, so as to lead to the suspicion of mesenteric disease. At this period the urine is generally scanty and high coloured; becomes turbid immediately on cooling; and lets fall a pale, clay-coloured deposit of lithate of ammonia, sometimes intermixed with the oxalate of lime, or an excess of phosphates. As the disease proceeds, the quantity of urine rapidly increases, and the thirst being commensurate, large quantities of fluid are consequently taken; so that an infant about twelve months old will be often found to pass from two to four or five pints of urine in the twenty-four hours. The urine in this, and indeed in all the subsequent stages of the affection, is commonly transparent, and of a pale-yellow or greenish tint. Its specific gravity varies from 1·010 to 1·025; and on examination it will be found to contain a great excess of urea, and occasionally even traces of albumen or sugar.

This form of diuresis must be considered as rather formidable; since, if it be neglected or mal-treated, it most commonly ends in organic lesions of the kidneys, or in diabetes. It most frequently occurs in the children of strumous individuals, who are at the same time dyspeptic or gouty; especially if they have been improperly nourished, or brought up in confined, imperfectly-ventilated apartments.

The general principles of *treatment* are,—removal to a pure country atmosphere, or to the sea-side, where a bracing dry air can be breathed; the employment of tepid or warm sea-water baths: attention to diet—animal and farinaceous matters being most suitable, with plenty of milk; a gradual but steady diminution in the quantity of fluids allowed; and the administration of small doses of Dover's powder to increase the functions of the skin, as well as to relieve the general irritability. Gentle aperients will be needed to regulate the state of the bowels; pepsine should be tried, if any indications of dyspepsia present themselves; and lastly, tonics of bark, quinine, or steel, will prove highly useful.

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[*] *On the Nature and Treatment of Stomach and Renal Diseases.* 5th ed., p. 58. London, 1848.

SECTION IV.—INCONTINENCE OF URINE.

Incontinence of urine may occur in early life from many causes. It may be associated with a tendency to renal disease, or with a disposition to gravel, or it may depend upon constitutional weakness and irritability, or it may be due to an increase of uric acid in the urine.

The troublesome involuntary flow of urine during sleep, which is so common in young children, may result from any of the causes of incontinence: hence in all cases of the kind the renal secretion should be examined. But usually this affection is the consequence of bad habits; being favoured by the free use of fluids during the after part of the day, by exposure to cold in the night, and by lying on the back,—a posture which seems to be very unfavourable to the retention of the urine, especially when the natural sensibility of the mucous membrane of the neck of the bladder is at all increased. It may usually be cured by making the little patient almost abstain from fluids for three or four hours before going to bed: by waking him to empty his bladder twice or thrice during the night: by tying a cotton reel over his spinal column, so that when he turns round upon his back he may at once be awoke: and by giving strength and tone to his system, by the administration of the tincture of the sesquichloride of iron. In some inveterate cases, the application of a succession of small blisters over the sacrum has effected a cure: but such agents should be avoided, if possible. Where the bladder is very irritable a belladonna plaster over the loins and sacrum will often be very useful: or four or five grains of the extract of this drug may be rubbed into the same region every night.

SECTION V.—DISEASES OF THE MALE GENITAL ORGANS.

1. Discharge from the Urethra.—Boys occasionally suffer from a discharge from the urethra; though this is more rare than the leucorrhœa of female children, probably because the mucous membrane of the genitals is less extensive and more protected from the irritating influence of external agents than in girls. An instructive case is recorded by Mr. Moss,[*] of a little boy six years old, affected with swelling and inflammation of the prepuce and glans penis, accompanied by a profuse discharge and pain in passing urine. His three sisters also suffered from leucorrhœa, and his grandmother had a severe attack of purulent ophthalmia: there was "no reason to believe that these children had been infected from any venereal source." The *treatment* of these cases consists in the use of the warm hip-bath, the application of bread-and-water poultices when the morbid action runs high, saline purgatives, and great cleanliness. The parents should be cautioned as to the infectious nature of the discharge, and the risk of ophthalmia from its contact with the eye.

2. Phymosis—signifies a preternatural constriction of the orifice of the prepuce, so that the glans penis cannot be uncovered.

Most children are born with the opening of the prepuce too small to allow of the complete retraction of the foreskin; but as the orifice becomes naturally dilated about the time of puberty, nothing need be done unless the opening is too small to allow the urine to pass freely. Should this prove to be the case the preputial orifice must be cautiously slit up, or circumcision may be performed; the latter being the most advisable proceeding.

3. Paraphymosis—consists of a retraction of a tight prepuce over the glans penis, with swelling preventing its return. This swelling is quickly followed by inflammation, which may run on to gangrene of the constricted glans as well as of

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[*] *Lancet*, 10 December, 1835.

the constricting ring of foreskin. The everted prepuce should be replaced as quickly as possible. Ice or cold water is to be applied for a few minutes to reduce the swelling, and then gentle but persevering attempts must be made to draw the prepuce forwards whilst the glans is pressed back. If these attempts fail, the constricting ring of foreskin must be divided with a bistoury.

4. HYDROCELE.—Having already spoken of *congenital hydrocele*—Chapter VI., paragraph 14—it is only necessary to mention that simple hydrocele sometimes occurs in infants only one or two months old, giving rise to feelings of alarm on the part of the parents. It is however generally to be cured by the application of a cold or slightly-stimulating lotion; or by simply painting the scrotum three or four times with the tincture of iodine. Should these means fail to procure absorption, the hydrocele may be punctured with a cataract needle, and the fluid allowed to drain away.

5. ACUTE TESTITIS.—Inflammation of the testicle—orchitis—is rare in young children, but it does sometimes occur. The symptoms are generally acute, and the swelling considerable; but the disease soon subsides, and is confined to one gland. Mr. Curling relates the following example:—A Jew child, only five months old, was brought to me at the London Hospital on account of a swelling in the left groin and scrotum. The mother first observed it the day before on washing the child; he afterwards cried the greater part of the night. The tumour extended from the external ring to the bottom of the scrotum, was full six times the size of the right testicle, felt firm and hard, and received no impulse when the child cried or struggled. The scrotum was distended and very red and hot. I ordered the application of a leech and cold lotion, and two drachms of castor oil to be given. In two days I found the swelling reduced about one-third, and much less tender; and the infant appeared to be free from suffering. I directed four grains of the *hydrargyrum cum cretâ* to be given every night. Under this treatment the swelling and induration soon subsided, and in a week the gland was nearly reduced to the size of the right testis, but the cord still remained thickened and hard. Three weeks after

the attack first commenced, I found the parts perfectly natural.*

SECTION VI.—DISEASES OF THE FEMALE GENITAL ORGANS.

1. INFANTILE LEUCORRHŒA.—Children of all ages are liable to suffer from a discharge from the mucous glands of the vulva. Occasionally the disease spreads up the vaginal canal; giving rise to a profuse purulent or muco-purulent fœtid discharge, with heat and pain during micturition, and excoriation of the surrounding parts. Care must be taken not to mistake this disease for gonorrhœa produced by infection, though I am unable to point out any diagnostic signs by which the error may be avoided; for I have seen instances where the inflammation has been so intense that the appearance has very much resembled that caused by violence, and yet it has been impossible for anything of the kind to have taken place. The history must be therefore thoroughly inquired into, and the cause surmised. The nature of the child's constitution will sometimes throw a light on the nature of the discharge, inasmuch as strumous subjects are especially apt to be affected with leucorrhœa; particularly during the period of dentition, or if they suffer from neglect of cleanliness, or from the irritation of ascarides in the rectum, or from constitutional debility. Occasionally the discharge seems to prevail as an epidemic. The virus is highly contagious, and its application to the eye gives rise to violent ophthalmia.

It has been doubted whether the discharge is communicable from the child to the adult male or female; for unfortunately cases of infantile leucorrhœa have led to false accusations, and much misery. Since the occurrence of some important trials in the Dublin law courts four years ago, Mr. Wilde has examined this question with great skill; and from his investigations there can be now no dispute, that the answer must be in the affirmative. Amongst other remarkable cases, this gentleman relates the following:—During the summer weather of 1855, "a lady and a gentleman both became affected with a discharge from the genitals; in the female, however, the disease was most virulent, and presented all the symptoms of vaginitis, with the usual excoriations and incrustations consequent thereon. The lady accused the gentleman, and the gentleman the lady. Mutual recrimination ensued, and both parties, strong in their own innocence, felt aggrieved and insulted. Fortunately the police authorities were not consulted in this dilemma, otherwise we might have had it brought before the gentlemen of the long robe, to eventuate, perhaps, in an appeal to the House of Lords. Each party appealed to the surgeon, who, on examining into the state of the case, expressed a desire to see the children, when he found that a girl, eight or nine years of age, laboured under well-marked symptoms of infantile leucorrhœa; that she had slept with her mother, had evidently infected her, and that the mother had given the disease to the husband."*

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* *A Practical Treatise on the Diseases of the Testis, &c.*, p. 227. London, 1843.

The *treatment* of infantile leucorrhœa must be perseveringly carried out, or the disease will last for months. Attention to cleanliness, frequent sponging with an astringent lotion, the use of cold hip baths containing a little alum, and mild alteratives or laxatives will be needed. The diet should be plain but nourishing; and tonics—especially of quinine and steel—will always be useful. If the discharge prove obstinate, a short residence at the sea-side with sea-bathing will generally cure it.

2. Cohesion of the Labia.—After inflammation of the vaginal labia, the contiguous surfaces have been found adherent; the adhesions perhaps being due to the organization of the lymph which has been effused. The only treatment required, will be the separation of the labia by a probe, or if necessary by a bistoury; taking care to keep the edges of the wound apart by lint, until cicatrization has taken place.

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* *Medical Times and Gazette*, January 17, 1857.

CHAPTER XX.

ACCIDENTS, BURNS, &c.

SECTION I.—FOREIGN BODIES IN THE AIR-PASSAGES.

General Observations.—The number and variety of articles that may enter the air-tubes, and give rise to severe or fatal mischief is very remarkable. The most frequent substances which do so in children, are—seeds of all kinds, beans, peas, cherry-stones, pieces of hard wood, buttons, pins, small coins, marbles, pebbles, bits of slate pencil, beads, and small nails. The size of these articles is often such that it seems impossible they could have passed through the chink of the glottis; yet they do so. Thus, Dr. Mott has recorded an instance in which a child only eleven months old, inhaled a black shawl-pin two inches long, with a head nearly as large as a small marble:[*] at Kœnigsburg in Germany, the larnyx of a goose became impacted in the windpipe of a boy twelve years old:[†] M. Bérard had to perform tracheotomy on a boy not quite seven years old, to remove a marble eight lines in diameter:[‡] and Mr. Fergusson has had to resort to the same operation to extract a plum-stone from the trachea of a girl seven years of age.[§]

When the extraneous substance is of an animal or vegetable nature, it is apt to swell, owing to its imbibing moisture; so that a small bean or pea has been known to increase to thrice its size in a few days. In a few fortunate cases it has become softened and broken up, so as to permit of its expulsion piecemeal; when retained—as it is usually—the foreign body becomes incrustated with mucus, or with lymph, or even with a few grains of carbonate or phosphate of lime. The substance may get lodged in one of the ventricles of the larynx, or it may become fixed between the chordæ vocales, or it may be arrested in the trachea, or it may descend into one of the bronchial tubes—especially into the right.

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[*] *New Hampshire Journal of Medicine*, p. 197. April, 1852.

[†] *London Medical Gazette*, vol. xi., p. 559. 1850.

[‡] *Archives Générales de Médecine.* 2nd series, tom. ii., p. 125. Paris, 1833.

[§] *Opus cit.*, p. 648.

Symptoms.—The entrance of the foreign body usually occurs during a strong and sudden inspiration; it immediately gives rise to a violent spasmodic cough, dyspnœa, and a sense of impending suffocation; and sometimes even to sudden death, by arresting the respiration. After a few minutes, the violence of the first symptoms usually abates for a time; the cough and dyspnœa returning at variable intervals. Sometimes the calm lasts for many hours; usually it is short—of twenty or thirty minutes' duration. The subsequent symptoms will depend upon the situation in which the foreign body is retained. Thus, if it remain in the *larnyx*, there will usually be violent, harassing, and suffocative cough; perhaps loss of voice, or inability to speak above a whisper; probably, pain in swallowing; tenderness over the part; and noisy hissing respiration, with more or less dyspnœa. When the substance descends below the larynx, it is seldom retained in the trachea, but passes on into *one of the bronchial tubes*—in the great majority of instances into the right, being directed to this by the bronchial septum. If, under these circumstances, auscultation and percussion be practised, it will be found that air does not enter the obstructed lung at all, or where the obstruction is only partial—that it fills the lung incompletely. Hence there will be a complete loss or a diminution of resonance on percussion, with diminution or absence of the respiratory murmur on auscultation. The foreign body not unfrequently *plays up and down the trachea*, under the influence of fits of coughing. This change in position gives rise to severe spasmodic attacks of dyspnœa; a peculiar sensation of movement appreciable by the patient; and a sound of motion detected by auscultation, as well as—perhaps—to a flapping or valve-like sound produced by the foreign body being forced against the rima glottidis in expiration.

Supposing that the substance is not expelled or removed, the patient will be liable to be suffocated at any moment from the foreign body pressing up into the larynx under the influence of a fit of coughing; or if he escape this risk, there is the fear of inflammation with all its dangers. After the subsidence of the immediate symptoms, the foreign body sometimes gives rise to no appreciable inconvenience for many weeks or months: Louis relates such an instance, where the patient did not—after the first few minutes—experience a bad symptom for twelve months, at the end of which time he coughed up a cherry-stone followed by such copious expectoration, that he died from exhaustion in three days.* Dr. Condie attended a child who continued free from all symptoms of disease for a week, after the first symptoms had subsided: pneumonia then set in, which ended fatally on the fifth day, when a large bead was found obstructing the right bronchus.†

Occasionally death occurs during the act of vomiting, owing to some of the ejected matters lodging against the rima glottidis, or even passing down the windpipe. Thus, Corvisart being desirous of exercising a close supervision of the clinical wards at La Charité, visited them one evening unexpectedly. The steward, who had been indulging in a hearty meal, was taken by surprise, and became sick; but making a violent effort to repress the vomiting, he fell to the ground and expired. On examining the body, the larynx, trachea, and bronchial tubes were found filled with half-digested food.‡

Diagnosis.—The symptoms of extraneous bodies in the respiratory organs may be imitated by different diseases. They may be distinguished from those of *croup*, by the state of the pulse and skin, which are rarely excited until the foreign substance has had time to give rise to inflammation,—by the difficulty of breathing existing during expiration and not most severely during inspiration as in croup,—by the absence of the croupy character of voice,—and by the complete intermissions: from *hooping-cough*, by the history,—the absence of the peculiar hoop,—and by the absence of great dyspnœa during inspiration: from *spasm of the glottis*, by the history and by the absence of any auscultatory signs: and lastly, from

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* *Memoir on Bronchotomy*, in *Memoirs of the Royal Paris Academy of Surgery*. Translated by Ottley, p. 277. London, 1848.

† *Diseases of Children*. 3rd ed., p. 366. Philadelphia, 1850.

‡ *Laennec on Diseases of the Chest*. Translated by Forbes. 4th ed., p. 131. London, 1834.

the impaction of extraneous substances in the pharynx and œsophagus, by examining these passages with the finger and probang. The want of this latter precaution has proved fatal:—a man while eating, was seized with symptoms of suffocation and difficult deglutition; the trachea was opened; but as nothing was found it was concluded that the substance had descended into one of the bronchial tubes, until after death the surgeon was surprised at discovering it fixed in the œsophagus.

There will, however, be but little difficulty in forming a correct diagnosis in the majority of cases, if the history be carefully attended to. Thus, suppose a child "has been playing with a grain of corn, bean, pebble, or similar body, and has been suddenly seized with symptoms of suffocation, violent spasmodic cough, lividity of the face, pain in the upper part of the windpipe, and partial insensibility, the presumption will be strong, that the substance whatever it may have been, has slipped into the air-passages, and is the immediate and only cause of the suffering which the surgeon has been sent for to relieve. The presumption will be converted almost into positive certainty if the person was just previously in the enjoyment of good health; if he was romping, jumping, or laughing at the moment of the accident, with the substance, perhaps, in his mouth, or while attempting to throw it into that cavity; and especially, if the symptoms, after having been interrupted for a few minutes, continue to recur, with their former, or even with increased intensity, at longer or shorter intervals."*

Pathological Effects.—The most common is inflammation of the mucous membrane, perhaps going on to ulceration: the latter effect is generally confined to the tissues in contact with the extraneous substance. The normal secretion of mucus is always increased; frequently it becomes muco-purulent, and in some instances the bronchi have been found loaded with the latter. When the foreign matter is retained in one of the bronchial tubes, it may produce pulmonary collapse if it completely obstruct the tube, or inflammation of the corresponding lung may be set up, giving rise to all the ordinary symptoms of pneumonia. Abscesses also form at the seat of obstruction. In a few instances pulmonary emphysema has been induced: in others, pleurisy leading to effusion: and in a very small number, inflammation of the heart and its investing serous membrane. Mr. Herbert Mayo has recorded a case in which a boy twelve years old died in consequence of the inhalation of an ear of rye: pulmonary irritation with the most fœtid expectoration followed, and hectic fever set in which proved fatal. On dissection the extraneous body was found in an abscess common to the lung and liver; the latter having become involved by the extension of the inflammation through the diaphragm.*

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* *A Practical Treatise on Foreign Bodies in the Air-Passages.* By S. D. Gross, M.D., &c., p. 90. Philadelphia, 1854.

Treatment.—The foreign substance is sometimes spontaneously expelled, especially during a paroxysm of cough and dyspnœa. It has occurred when the patient has been laid upon a bed with his head hanging over the edge; and in a few instances when he has been in the erect posture. The period of this fortunate occurrence is variable: it may happen a few minutes after the accident, or months subsequently. Dr. Webster has recorded an instance where a cherry-stone was expelled sixty-eight days after its introduction, and the patient recovered after having suffered from pneumonia, abscess, and hectic fever:† while Dr. Watson refers to an instance where an ear of barley was spontaneously ejected seven years after the accident, and the patient got well.‡ In a few instances the substance has been got rid of by inverting the body, and smartly striking the back of the chest to dislodge the obstructing agent; but the latter, on touching the glottis, gives rise to such severe spasm, that it very rarely passes out.

These facts have led practitioners to attempt to expel these extraneous substances by the use of medicines, especially by sternutatories and emetics: but the anticipated result has so very rarely ensued, that the practice ought to be abolished, especially as it is not without danger, and it causes the loss of valuable time. Since then, no patient can be safe who has a foreign body in the windpipe, how is it to be got rid of?

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* *Outlines of Pathology*, p. 506. London, 1836.

† *Lancet*, vol. i., p. 802. London, 1830.

‡ *Practice of Physic*, vol. ii., p. 225. 3rd ed. London, 1848.

When the body is in the larynx, laryngotomy should be performed as early as possible: but when it has descended lower, and perhaps in all cases in young children, then the trachea should be opened. The substance may be ejected through the glottis, or through the artificial opening, directly the latter is made: but should this not take place, then the patient's body should be inverted, and a few smart taps made to dislodge the substance. The inversion is not likely to be followed by any bad consequences, because the patient will breathe through the artificial opening; and hence the coin, or bean, or whatever it may be, will not give rise to that severe spasm of the glottis which it would otherwise do. The question may be entertained whether this spasm of the glottis cannot be overcome by the inhalation of chloroform, without opening the trachea; but I am not aware of any instance where such a plan has been tried. If, however, a surgeon determine to resort to it, he should be prepared to perform tracheotomy immediately, in case of the necessity arising.

When the extraneous body resists all efforts to remove it, the wound in the trachea should be kept open to favour its extrusion subsequently. When the operation, however, is successful, the incision should be immediately closed by strips of plaster, or by sutures.

SECTION II.—BURNS AND SCALDS.

Amongst the most frequent accidents that befall children, burns and scalds deserve prominent notice. These casualties vary as regards their local and constitutional effects, according to the degree and duration of the heat, the extent of surface involved, the seat of the burn, and the strength of the vital powers at the time of the accident. The great depression which follows immediately after the occurrence of an extensive burn, will of course be felt more severely by a weak strumous child than by one whose constitutional powers have been previously kept up to the standard of health.

Burns may be classified into four groups, according as they give rise to simple inflammation of the skin, inflammation with separation of the cuticle and the production of blisters, destruction of the papillary layer of the derma or cutis, and disorganization of the entire skin down to the subcutaneous areolar tissue.

1. *The burn which produces simple inflammation of the skin* is characterized by redness of the affected part, slight swelling, and severe smarting pains which last for some hours. It may be caused by the momentary application of hot water, or of steam, or of the rays of a strong fire, or even—in tropical climates—by exposure to the sun's rays. The constitutional disturbance is slight; and the local effects cease in a few days with desquamation of the cuticle.

2. *Inflammation of the skin with the production of blisters filled with serum* results from a more severe burn. The skin is intensely red and swollen, the vesicles are often large, and the pain is hot and smarting: if the vesicles get broken or rubbed off, the excoriated derma becomes exquisitely sensitive. In favourable cases the epidermis exfoliates, and the part is restored to health without leaving any mark; but not unfrequently suppuration or superficial ulceration takes place, and a cicatrix is left to show the extent of the mischief. The constitutional symptoms are often severe, the shock to the nervous system being especially felt by delicate children.

3. *Destruction of the papillary or superficial layer of the derma* is distinguished "by the presence of one or more patches of a greyish-white, yellowish, or brownish colour, representing the dead portions of the papillary layer of the skin; the vesicles covering these patches are filled with a brownish, lactescent, or sanguineous serum, while those on the erythematous part of the burn are transparent. If the discoloured patches be lightly touched, they are found to be insensible; but if they be pressed with any force, so as to act upon the parts below, the pain is considerable. The pain attending this form of burn is always more severe than that of any other kind, in consequence of the seat of mischief being the most sensitive part of that organ of acute sensation, the skin; and it lasts for one or two days. In three or four days after the burn, the pain, which had ceased, is suddenly renewed, suppuration becomes active, and the process of separation, by which the dead is to be removed from the living tissue, is established. When the ulceration finally heals, it leaves behind it a cicatrix, which is white from the loss of the vascular layer of the skin, and more or less

fibrous and areolated, according to the depth in the corium, to which the burn had extended."*

4. *Disorganization of the entire skin down to the subcutaneous areolar tissue* takes place when the heat is prolonged. The pain is excessive during the application of the burning body, but ceases soon afterwards owing to the destruction of the vitality of the part. A black, hard, dry, eschar forms—or a soft eschar in scalds—which at the end of three or four days begins to be detached by suppuration: when perfectly separated, a deep ulcer is left behind. This ulcer gradually heals by granulation; but an indelible cicatrix is formed, which has a great tendency subsequently to contract. When the contraction is excessive, considerable deformity is likely to result: thus in burns of the neck, the chin may be drawn down to the sternum by the tightening of the cicatrix.

The constitutional symptoms of the last two classes of burns are very important, and of two distinct kinds,—viz., primary and secondary. The *primary symptoms* are due to the pain, as well as to congestion and irritation of the cranial, thoracic, and abdominal viscera. The shock to the nervous system from the agonising sufferings may even destroy life almost at the onset; but where the patient survives this, the pain may —by exciting the heart, brain, and spinal cord—give rise to dangerous congestion of some of the vital organs. In the one case there will be extreme prostration, stupor, and coldness of the extremities; in the other, restlessness, excessive excitement, and a high degree of fever. The *secondary symptoms* accompany the inflammation and suppuration which is set up for the removal of the destroyed tissues. The inflammation when severe produces general fever with symptoms of cerebral or pulmonary congestion: but it is soon followed by exhaustion, which increases the longer the suppurative stage continues. A curious observation has been made by Mr. Curling to the effect that a sloughing ulcer sometimes forms in the upper part of the duodenum within a few days after a severe burn, and doubtless in consequence of it.† Further observations are required, however, to confirm the correctness of Mr.

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* *On Diseases of the Skin*, by Erasmus Wilson. 4th ed., p. 282. London, 1857.

† *Medico-Chirurgical Transactions*, vol. xxv., p. 260. London, 1842.

Curling's views: since in twelve fatal cases which occurred in Guy's Hospital during the year 1855 and part of 1856 no disease of any kind was discoverable in the duodenum after death.*

Treatment.—In the treatment of burns and scalds, the first object of the practitioner should be to relieve the pain and depression; and for young children nothing can be better employed than small doses of opium in port wine or in sweetened port-wine negus. When the suffering is severe, the inhalation of chloroform will be very beneficial; but the opium should be first administered, so that the sleep or ease induced by the anæsthetic may be prolonged by the narcotic. I have only had an opportunity of putting this plan into practice in one case; but the effects were so excellent, that I am bound to recommend it. The best local application in my opinion is the common carron oil—F. 85; which should be freely applied, and the parts then covered with a sufficient layer of cotton wool to exclude the atmospheric air. Some physicians speak highly of the use of flour, thickly dusted over the burnt or scalded skin; and where there are no vesications it is useful. But when the cuticle is raised into blisters, these are apt to burst; and the serum mixing with the flour forms a dirty, irritating paste, which is with difficulty removed. When the vesicles are large, it is better to puncture them with a fine needle to prevent their rupturing; but care must be taken not to remove the elevated cuticle. The importance of not disturbing the first dressings unnecessarily, can hardly be too strongly enforced; for independently of the suffering which such meddlesome surgery will always give rise to, the admission of the air to the inflamed surface will only increase the mischief. When suppuration is setting in, warm light poultices or plain water dressings often give great relief; but if the inflammatory action is severe, cold goulard water lotions are to be preferred.

At the end of twenty-four or forty-eight hours, reaction will be established; and the occurrence of internal congestions must be guarded against. Simple effervescing salines and mild laxatives are then valuable, and often suffice to remove all danger. But when the reaction is excessive, great good will arise from inducing copious sweating; and in no way can this be better produced—when the child is irritable, restless, parched and thirsty, and with a hot dry skin—than by taking it out of bed, gently plunging it into a tub of water at 70° Fah., and then enveloping it immediately in several warm blankets. A copious perspiration will soon break out over the whole body; and this is to be encouraged for several hours by freely giving sweetened water or barley-water.

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* Report of Post-Mortem Examinations of Cases of Burn, by Dr. S. Wilks. *Guy's Hospital Reports.* Third Series, vol. ii., p. 133. London, 1856.

The subsequent management should depend very much upon the condition of the patient. The numerous symptoms must be combated as they arise; but great caution will have to be exercised in the employment of lowering measures. I generally try to support the strength during the whole progress of the case by stimulants and nourishing food; strong beef-tea thickened with arrowroot, plenty of good milk, and two or three raw eggs daily being favourite remedies. At the same time we must take care that the patient does not pass restless nights, but by the use of sedatives give ease and sleep. Although young children are very susceptible to the influence of opium, yet this drug is very beneficial; and when the injury produces great suffering they bear larger doses than in natural disease.*

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* The most extensive burn ending in complete recovery that I have read of, is described by Mr. Grantham. A youth sixteen years of age, was burnt to the following extent by the explosion of some fire-works. From the upper and fore part of the neck, extending laterally down the left arm to the insertion of the deltoid; occupying both axillæ; passing backwards to within three inches of the spines of the vertebræ; over the chest, body, and genitals, to the verge of the anus; extending along the upper part of the right thigh, and down the left thigh to the knee; destroying the cuticle, rete mucosum, and corium. The whole measured above six hundred superficial inches; and averaged a quarter of an inch in depth. The subcutaneous structure was completely lost, so that the arteries and veins were seen, as if neatly dissected, lying on the surface of the muscles and the fascia. The treatment consisted in freely giving opium, in well supporting the strength, in properly protecting the wound, and in the external and internal use of antiseptics. Three months after the accident, the patient had a sphacelated wound over the sacrum; four months after this,

A rather extensive observation of nurses and their habits has shown me a favourite practice of these matrons which has not unfrequently led to most disastrous consequences. At the conclusion of the meal known as "tea," the *bonne* frequently fills the teapot with water; so that when the children complain of thirst in the course of the evening there may be something for them to drink. In allowing the child to quench its thirst, it is not deemed necessary to pour the infusion into a cup; but the spout is offered to the lips, and a draught is given. This popular habit leads young children to prefer drinking through the spout as often as the opportunity presents itself; but unfortunately they sometimes avail themselves of the nurse's absence to do so when the teapot contains boiling water, or they even experimentalise with the kettle. Most severe scalds of the fauces, glottis, and pharynx have been thus produced; the spasmodic contraction of the constrictor muscles of the pharynx preventing the passage of the fluid further downwards, and so saving the stomach. In the *treatment* of these cases we must be guided by the principles already laid down: opium, and soothing diluents—such as treacle and water, or mucilage with liquorice—being especially required, followed if necessary by the bath. When œdema of the glottis arises, relief may perhaps be given by making rather free scarifications; but if suffocation seems to be imminent, laryngotomy or tracheotomy must be quickly performed. Unfortunately the operation does not often succeed, owing to the prostrating effects of the scald upon the system generally.

SECTION III.—FROSTBITE AND CHILBLAINS.

1. Gelatio, or Frostbite.—Severe cold when long continued, produces insensibility, arrest of the circulation, and death of the part to which it is applied. Examples of gelatio are

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an attack of bronchitis; and two years subsequently—when he had improved so as to be able to walk a short distance—a severe attack of erysipelas. Five years elapsed from the time of the burn until the wound healed: during the whole of which time there was a greater or less tendency to congestion of the brain.—*Facts and Observations in Medicine and Surgery*, p. 90. London, 1849.

very rarely seen in this country; but the unfortunate children of drunken parents have suffered from frostbite, after exposure to the keen night-air of winter. The management of such cases consists in gradually restoring the circulation to the affected part; friction with snow or cold water, followed by the cautious use of stimulants, being the best means of effecting this.

2. Pernio, or Chilblain—is the result of a suspension of vitality in a limited portion of the skin, from the action of cold. The effect of the cold is not felt at first; but as warmth returns to the affected part, there is itching and tingling, and the toe or finger is found on examination to be red and swollen. This condition lasts for several hours or even days, and the part then resumes its healthy condition; or if the morbid action continue, vesication and ulceration take place, and what is called a *broken chilblain* results. It is essentially a disease of childhood.

The *treatment* must consist in gentle attempts to restore the normal circulation and tone of the chilled member, by frictions with powdered starch or stimulating liniments. For this purpose the compound iodine ointment, or the compound camphor liniment, or the turpentine liniment of the Pharmacopœia may be prescribed: or the skin may be painted twice or thrice daily with the compound tincture of iodine. When the chilblain is ulcerated, it must be at first soothed with water-dressing or bread poultices mixed with goulard water; but subsequently—unless it heals kindly—it is often advisable to apply stimulating ointments, such as the ceratum resinæ mixed with a little turpentine. The constitutional powers will generally be found to be below the normal standard: hence tonic medicines will often be required, and attention will have to be paid to the digestive organs.

SECTION IV.—CARBUNCLES AND BOILS.

1. Anthrax, or Carbuncle—may be defined as an acute inflammation of a circumscribed portion of the skin, extending deeply into the cutaneous tissue, and forming a more or less prominent swelling on the surface. The tumour is at first red, but soon becomes livid; it is excessively painful, the

pain being of a throbbing, burning kind; and as it attains its full size, numerous little points on the surface suppurate, and form perforations through which the core issues in the form of sloughs.

A large carbuncle is very dangerous; for in the first place, it is due to a vitiated state of the blood and enfeebled constitutional power; and secondly, the pain and irritative fever which it directly produces, gives rise to great disturbance of the system generally. The nape of the neck is a common situation of carbuncle: there is generally only one tumour: and it is a disease of the latter half of life, children very rarely—if ever—suffering.

Treatment.—Mild aperients; quickly followed by good, nourishing food, and tonics—especially ammonia and cinchona, quinine and steel, or the mineral acids. Locally, water-dressing, or linseed poultices, or poultices made with linseed and yeast, should be applied. When the pain is very severe, and the carbuncle threatens to be large, or the inflammation to be extending, it may be necessary to make a free incision into it; or when the tension is very great, relief will be given by using the knife, before suppuration has occurred; but there are many cases which do best left alone. Moreover it must not be forgotten that incisions are apt to be followed by erysipelas.

2. Furunculus, or Boil.—A boil may be described as a miniature carbuncle; commencing as a small red and painful point, slowly forming a little prominent tumour which contains a central core or slough, and ultimately ulcerating to discharge this core. Boils may occur singly or in crops. There is often only one; but as it heals, it is followed by another, which appears in a different region; and so one is succeeded by another for perhaps many weeks. The pain and general irritability is out of all proportion to the size of the tumour: and I have seen patients quite worn out at the end of two or three days with the suffering they have endured. Weakly and strumous children often suffer from boils; and many seem especially prone to them even from early infancy.

The *treatment* is the same as that recommended in the previous paragraph; with this proviso, that incisions are much more rarely necessary. One of the most frightful cases of erysipelas that I ever attended, and which endangered life for some weeks, was caused by the use of the knife to a trifling boil, that would have suppurated and got well in a day or two had it been simply poulticed. In ordering a poultice, care must be taken to have it small, so as to cover the inflamed surface only; as otherwise it merely soddens the surrounding tissues, and perhaps predisposes to a crop of boils. When the pain has been very severe I fancy that I have seen relief given by mixing the linseed-meal with hot laudanum or with a strong solution of morphia, instead of with plain water. Lastly, I must mention that I have in some six or eight instances tried the application of the acid nitrate of mercury and of the potassa fusa; but my experience of these agents does not induce me to recommend their employment.

SECTION V.—BLOWS AND BRUISES.

1. **Blows, &c.**—The blows and bruises which children receive from the rough treatment of their playmates, from falls, and similar accidents, seldom give rise to anything worse than a greater or less amount of pain and perhaps temporary disfigurement. It may perhaps be convenient, however, for the practitioner to remember, that in bruise-marks, "black-eye," ecchymosis of the conjunctiva, &c., the best application—and the one used by professed pugilists, according to Mr. Tyrrell*—is a poultice of black bryony-root (*Bryonia nigra*). The root is to be deprived of its external bark, finely scraped, mixed to a proper consistence with bread crumbs or flour, and then placed—in a thin muslin bag—over the discoloured part: a fresh poultice should be applied every six hours. The ecchymosis disappears in about forty-eight hours, even in severe cases. When the bryony-root cannot be procured, a linseed-meal poultice, mixed with a solution of hydrochlorate of ammonia, is the best substitute.

2. **Epistaxis**—or bleeding from the mucous membrane of

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* *On Diseases of the Eye*, p. 436, vol. i. London, 1840.

the nose, may be produced by a slight blow, or by over-exercise, or it not uncommonly arises spontaneously—particularly during early childhood. When primary, it never continues to such an excess as to endanger life: when secondary—as when it occurs in the course of hooping-cough, fever, purpura, &c.—its effects are often very serious. Quiet, cold to the nose and forehead, cold to the back or neck—so as to produce constriction of the superficial blood-vessels by reflex action, mild laxatives, and astringent injections—as the decoction of matico, will generally suffice to stop it. When the bleeding continues obstinate, or ceases merely to return repeatedly, no remedy will prove so beneficial as mercury given to the extent of producing very slight salivation. At the same time the bleeding nostril should be plugged with cotton wool soaked in a solution of alum; or it may even be necessary, as a last resource, to plug the posterior nares.

APPENDIX OF FORMULÆ.

The following Formulæ are intended for children about two years of age, unless the contrary is stated.

Formula 1. *Aperient and Alterative.*

℞. Pulveris rhei, sodæ sesquicarbonatis, āā ℈j.; infusi calumbæ, ℥iij. Misce. Capiat ℥ss. omni mane. *For strumous children between three and six years of age.*

2. *Mild Aperient.*

℞. Infusi rhei, ℥iss.; tincturæ cinnamomi, ʒj.; potassæ sulphatis, ʒss.; syrupi sennæ, ℥ss. Misce. Capiat ʒij. nocte maneque. *In faulty digestion with torpidity of the bowels.*

3. *Aperient and Stimulant.*

℞. Potassæ bitartratis, ʒij.; spiritûs ammoniæ aromatici, ♏xx.; tincturæ cardamomi compositæ, ʒj.; extracti glycyrrhizæ, ℈j.; decocti aloës compositi, ad ℥ij. Misce. Sumat ʒij. ad ʒiv. pro re natâ. *In laryngismus stridulus and other spasmodic diseases.*

4. *Simple Aperient.*

℞. Pulveris rhei, ℈j.; magnesiæ carbonatis, ℈ij.; pulveris cinnamomi, gr. x. Misce. *Six grains may be given to an infant less than twelve months old. Afterwards from* gr. x.—℈j. *The cinnamon disguises the taste of the rhubarb.*

5. *Laxative for Infants at the Breast.*

℞. Magnesiæ carbonatis, ℈j.; syrupi rosæ, ℥j. Misce. ʒj.—ʒij. pro re natâ. *In constipation with acidity.*

6. *Mild Laxative for Young Infants.*

℞. Potassæ bitartratis, ʒj.; mannæ optimæ, ℥j.; aquæ destillatæ, ℥iiss. Misce. *This forms a rather palatable paste, which infants readily suck.* Gr. x.—xv. *may be given every morning.*

7. *Infantile Purgative.*

℞. Mannæ optimæ, ʒij.; aquæ anethi, ℥j. Misce. *When the meconium is retained,* ʒj. *may be given every hour until the bowels are opened.*

8. *A Common Purgative Mixture.*

℞. Infusi sennæ compositi, ℥j.; aquæ menthæ piperitæ, ℥ss.; mannæ optimæ, ʒij.; bene commisce, cola, et adde magnesiæ carbonatis, ℈j.; tincturæ rhei compositæ, ʒj.; syrupi rosæ, ʒij. Misce. ʒj.—ʒij. horâ quâque tertiâ ad effectum catharticum. (*Maunsell and Evanson.*)

9. *Alterative, Purgative, and Diaphoretic.*

℞. Pulveris jalapæ, ʒss.; pulveris ipecacuanhæ, gr. v.; hydrargyri chloridi, gr. v.—gr. x.; sacchari albi, gr. x. Misce. Gr. ij.—gr. vj. tertiâ quâque horâ. *In inflammatory affections, where it is desired to promote excretion.*

Vel.

℞. Sulphuris sublimati, ℥j.; theriacæ, ℥ij. Misce. Capiat cochleare parvum omni mane. *This nursery remedy is useful as a gentle stimulant to the intestinal mucous membrane, especially to that of the rectum. It also acts as a mild stimulant to the skin and secreting organs generally.*

10. *Mild Murcurial Purgative for Infants.*

℞. Hydrargyri cum cretâ, gr. x.; pulveris rhei, ℈j.; pulveris cinnamomi compositi, gr. v. Misce. Sumat gr. iij.—gr. v. tertiis horis, donec alvus bene responderit.

11. *An Effectual Purgative.*

℞. Pulveris rhei, pulveris scammonii compositi, potassæ sulphatis, āā gr. x.; optime tere simul et adde, pulveris cinnamomi compositi, gr. v. Misce. Gr. iij.—gr. vj. quartâ quâque horâ ad effectum catharticum. *In croup, &c.*

12. *Purgative Oil.*

℞. Pulveris scammonii, ℈j.; olei amygdalæ, ℥j.; solve caloris mitioris ope, et adde Confectionis amygdalæ, ℥j. Misce. Dosis, ʒj.—ʒij. pro re natâ.

13. *Calomel and Scammony.*

℞. Hydrargyri chloridi, gr. ij.—gr. iij.; pulveris scammonii compositi, gr. iv.; pulveris zingiberis, gr. j. Misce fiat pulvis. *A very valuable purgative in the head affections of children; also useful as an anthelmintic.*

14. *A Drastic Purgative.*

℞. Pulveris scammonii compositi, gr. iij.—gr. viij.; pulveris cinnamomi compositi, gr. v. Misce. *Useful when there is torpidity of the abdominal viscera.*

15. *Another Drastic Purge.*

℞. Pulveris jalapæ compositi, gr. x.—ʒss. *In habitual costiveness, and in the dropsy which sometimes follows scarlatina.*

16. *Purgative Biscuits.*

Jalap powder, ʒj. : flour, ℥iv. ; moist sugar, ℥vj. ; ginger, ʒss. ; eggs, iv. Mix, and divide into twelve biscuits. *One should be eaten once or twice a-day, according to the effect desired.*

17. *Tonic, Purgative, and Anthelmintic.*

℞. Tincturæ ferri sesquichloridi, ʒss.; extracti glycyrrhizæ, ʒij. ; decocti aloës compositi, ℥iss. Misce. ʒj.—ʒij. bis terve indies.

18. *Purgative Liniment.*

R. Tincturæ aloës, ℥ss. ; linimenti saponis, ℥j. Misce. (*Dr. Merriman.*) *Effectual in keeping the bowels regular, if rubbed over the abdomen for five minutes daily.*

19. *An Excellent Anthelmintic.*

℞. Olei filicis maris, ʒss.—ʒiss. ; syrupi zingiberis, ʒj. ; misturæ acaciæ, ℥j. Misce, fiat haustus primo mane sumendus. *Especially valuable for destroying tape-worms.*

20. *Purgative Enemata.*

℞. Sodii chloridi, ʒiij. ; olei olivæ, ℥ss. ; decocti hordei, ℥iij. Misce. *To destroy and cause the expulsion of thread-worms.*

Vel.

R. Sodii chloridi, ʒij. ; tincturæ aloës, ʒj. ; decocti avenæ, ℥iiiss. Misce. fiat enema.

Vel.

℞. Olei ricini, olei terebinthinæ, āā ʒij. ; tincturæ assafœtidæ, ʒss. ; decocti avenæ, ℥iv. Misce. *In obstinate constipation.*

Vel.

℞. Olei ricini, ʒiss. ; confectionis rutæ, gr. x. ; decocti hordei, ad ℥iv. Misce. *Very useful when the intestines are distended with flatus.*

21. *Stimulating Emetic.*

℞. Cupri sulphatis, gr. ij. ; aquæ, ℥ss. Misce. Signetur.—"One-fourth part to be taken every quarter of an hour, in barley-water, until free vomiting takes place."

For an infant one year old. The advantage of this emetic over sulphate of zinc is its tastelessness; it is valuable in the third stage of croup to aid the removal of the false membrane.

22. *Alum Emetic.*

R. Aluminis, ʒiij. : syrupi, ℥j. Misce. Signetur.—"Half to be taken immediately, and the remainder in fifteen minutes unless vomiting be induced."

Recommended by Dr. Meigs as one of the most certain emetics in croup. It does not produce prostration like antimony, nor does it act injuriously upon the gastro-intestinal mucous membrane.

23. *Mild Emetics.*

℞. Pulveris ipecacuanhæ, gr. ss.—gr. j.; sacchari albi, quantum placeat. Misce. *This is a certain and mild emetic which may be exhibited to the youngest infant, and repeated every twenty minutes, until vomiting takes place. After one year of age the dose may be doubled.*

Vel.

℞. Vini ipecacuanhæ, syrupi, āā ℥ss. Misce. Capiat ʒss.—ʒij. sæpe ad emesem.

24. *Antimonial Emetics.*

℞. Antimonii potassio-tartratis, gr. ss.; syrupi, aquæ, āā ℥ss. Misce. Sumat ʒj.—ʒiij. sæpe ad emesem.

Vel.

℞. Antimonii potassio-tartratis, gr. iij.; oxymellis scillæ, ℥j.; aquæ fontanæ, ℥ij. Misce. *A tablespoonful every quarter of an hour, for a child three years of age, suffering from croup.* (*Sachse.*)

Vel.

℞. Vini antimonii potassio-tartratis, oxymellis scillæ, āā f.℥ss. Misce. ʒj. sæpe ad emesem.

Vel.

℞. Vini ipecacuanhæ, ℥ss; vini antimonii potassio-tartratis, ʒij.; oxymellis scillæ, ʒij.; aquæ destillatæ, ℥j. Misce. ʒj.—ʒij. sæpe ad emesem. *More certain and less violent than the preceding.* (*Maunsell and Evanson.*)

25. *Coxe's Hive Syrup.*

℞. Scillæ, radicis senegæ, āā ℥j.; mellis, lb.ss.; aquæ, lb.j. Misce. Fiat syrupus, cuique unciæ cujus addatur antimonii potassio-tartratis, gr. j. Dose from ten drops to a teaspoonful every fifteen minutes, as an emetic; or every two or three hours as an expectorant. *This compound is highly esteemed in America in the advanced stages of infantile bronchitis, croup, pertussis, &c.*

26. *Depressing Expectorant Mixture.*

℞. Vini ipecacuanhæ, ʒij.; vini amtimonii potassio-tartratis, ʒj.; oxymellis scillæ, ʒiss.; liquoris ammoniæ citratis, ℥ss.; misturæ camphoræ ad ℥ij. Capiat ʒj.—ʒij. quartâ quâque horâ. *In the early stage of acute bronchitis.*

27. *Stimulant and Expectorant.*

℞. Ammoniæ sesquicarbonatis, gr. ij.; tincturæ scillæ, ♏v.; sacchari fæcis, ʒss.; decocti senegæ, ℥ss. Misce, fiat haustus secundâ quâque horâ sumendus. *Very useful during the convalescence from croup.*

28. *Stimulant and Expectorant.*

℞. Vini antimonii potassio-tartratis, ʒj.; spiritûs ammoniæ aromatici, ʒiss.; syrupi tolutani, ʒj.; tincturæ camphoræ compositæ, ʒij.; misturæ camphoræ, ℥iss. Misce. Capiat ʒj.—ʒij. tertiâ vel quartâ quâque horâ. *In those pulmonary affections of infants and children where we wish to administer tartar emetic without producing depression.*

29. *Senega and Squills.*

℞. Oxymellis scillæ, ʒij.; syrupi papaveris, ʒiij.; vini ipecacuanhæ, ʒj.; liquoris ammoniæ acetatis, ℥ss.; decocti senegæ, ℥j. Misce. ʒj.—ʒij. secundâ quâque horâ. *In pneumonia occurring during fever, or in a depressed constitution.*

30. *Expectorant and Sedative.*

℞. Vini ipecacuanhæ, ʒiss.; tincturæ scillæ, ʒj.; syrupi papaveris, ʒiij.; misturæ acaciæ, ad ℥ij. Misce. Capiat ʒj.—ʒij. tertiâ quâque horâ. *In irritable cough with deficient expectoration.*

Vel.

℞. Pulveris ipecacuanhæ compositi, gr. ij.; pulveris ipecacuanhæ, gr. ¼. Misce, fiat pulvis horâ somni sumendus. *For a child between four and six years.*

31. *Saline Expectorant and Diaphoretic.*

℞. Vini ipecacuanhæ, ♏xl.; liquoris ammoniæ citratis, ʒiij.; aquæ menthæ viridis, ad ℥j. Misce. Sumat ʒj.—ʒij. quartâ quâque horâ. *In catarrh with mild fever.*

Vel.

℞. Potassæ nitratis, gr. xii.; spiritûs ætheris nitrici, ♏xx.; vini antimonii potassio-tartratis, ʒss.; tincturæ camphoræ compositæ, ʒj.; aquæ anethi, ʒvj. Misce. Signetur.—"One drachm to be given every four hours in sugared water."

For a child between one and two years of age, suffering from bronchitis.

32. *Chlorine for Internal Administration.*

Put eight grains of chlorate of potass in a strong pint bottle, and pour upon them one drachm of strong hydrochloric acid. Close the mouth of the bottle until the violent action ceases, when add one ounce of water, and agitate well; add another ounce, again shake, and continue this process until the bottle is full. ℥ss. or ℥j. may be taken frequently according to the age. An adult may use the whole pint in one day.

33. *Sedative and Diaphoretic Mixtures.*

℞. Vini ipecacuanhæ, ʒss.; vini antimonii potassio-tartratis, ♏xvj.; tincturæ camphoræ compositæ, ♏xx.; misturæ amygdalæ, ʒvij. Misce. Capiat ʒij. quartâ quâque horâ. *For infants one year old suffering from febrile disturbance, catarrh, &c.*

Sedative and Diaphoretic Mixtures—continued.

R. Vini ipecacuanhæ, ♏xx.; oxymellis scillæ, ʒj.; spiritûs ætheris nitrici, ʒss.; syrupi papaveris, ʒij.; aquæ anisi, ʒviij. Misce. Sumat ʒij. tertiâ vel quartâ quâque horâ. *For an infant one year old, affected with catarrh.*

Vel.

R. Potassæ bicarbonatis, ℈ij.; acidi citrici, ℈j.; vini antimonii potassio-tartratis, vini ipecacuanhæ, āā ʒj.; syrupi papaveris, ʒiij.; misturæ camphoræ, ℥iiss. Misce. Capiat ʒiij. tertiâ quâque horâ. *For a child two years old.*

34. *Alterative and Diaphoretic.*

R. Antimonii-potassio-tartratis, gr. ss.; hydrargyri chloridi, gr. ij.; potassæ nitratis, ℈ij. Misce. Fiant pulveres, xij. Sumat unum quartâ quâque horâ. *In some cases of pericarditis, meningitis, &c. For an infant six months old.*

Vel.

R. Hydrargyri chloridi, gr. vj.; pulveris ipecacuanhæ compositi, gr. ij. Misce, et divide in pulveres sex. Sumat unum omnibus sextis horis. *For a child between eighteen and twenty-four months old.*

Vel.

℞. Antimonii potassio-tartratis, gr. j.; hydrargyri chloridi, gr. iij.; sacchari albi, ℈j. Misce, et divide in pulveres xij. Sumat j. quartâ quâque horâ. *In acute inflammations of the serous membranes, &c. For an infant twelve months old.*

Vel.

R. Hydrargyri cum cretâ, gr. xij.; pulveris ipecacuanhæ compositi, gr. ij. Misce, et divide in pulveres sex. Capiat unum nocte maneque.

35. *Mild Fever.*

R. Potassæ nitratis, ʒss.; vini ipecacuanhæ, ʒj.; syrupi papaveris, ʒij.; misturæ camphoræ, ʒx. Misce. ʒj.—ʒij. tertiâ quâque horâ.

Vel.

℞. Spiritûs ætheris nitrici, ʒss.; liquoris ammoniæ citratis, ℥ss.; misturæ camphoræ, ad ℥iij. Misce. Capiat ℥ss. quartâ quâque horâ.

36. *Fever Drinks.*

℞. Potassæ chloratis, ʒss.—ʒj.; decocti hordei, Oj. Misce fiat potus. *A child under three years of age should be allowed only from one-quarter to one-half of the pint.*

Vel.

℞. Potassæ nitratis, gr. x.—℈j.; decocti hordei, Oj. Misce. *This may be taken during the twenty-four hours when feverish symptoms predominate without any apparent cause.*

37. *Chlorate of Potash Mixtures.*

℞. Potassæ chloratis, gr. xv.; aquæ, ℥iij. Misce. Sumat ℥ss. quartâ quâque horâ. *For a child one year old affected with stomatitis or with odontitis. It may be given in barley-water.*

Vel.

℞. Potassæ chloratis, gr. v.; tincturæ cinchonæ compositæ, ʒss.; tincturæ camphoræ compositæ, ♏v.; aquæ anethi, ad ʒiv. Misce. Fiat haustus quartâ quâque horâ sumendus. *For a child two years old, suffering from gangrenous stomatitis.*

38. *Iodine Mixtures.*

℞. Iodinii, gr. x.; potassii iodidi, ℈j.; aquæ destillatæ, ℥j. Misce. *Four or six drops three times a day in sweetened water; in bronchocele, enlargement of mesenteric glands, &c.*

Vel.

℞. Potassii iodidi, gr. ij.; syrupi papaveris, ʒj.; aquæ pulegii, ʒvij. Misce. Sumat ʒj ter die. *For an infant six months old.*

Vel.

℞. Potassii iodidi, gr. viij.; syrupi sarsæ, syrupi, āā ʒiv. Misce. Capiat ʒj. ter die. *Very useful in pleurisy, &c., when we fear that effusion is taking place. For a child three years old.*

Vel.

℞. Potassii iodidi, gr. vj.—gr. xij.; aquæ, ʒxij. Misce. Signetur.—"One drachm—by measure—every four hours, in a small cup of weak tea, or of plain barley-water." *Very valuable in some of the acute inflammatory affections of childhood:—in certain cases of croup, it may be given as above, to an infant one year old.*

39. *Alterative and Antispasmodic.*

℞. Potassii iodidi, gr. viij.; tincturæ hyoscyami, ♏xij.; tincturæ assafœtidæ ʒj.—ʒiij.; decocti senegæ, ad ℥iss. Misce. Capiat cochleare parvum quartâ quâque horâ. *In the third stage of croup, in some cases of acute bronchitis, and in some forms of pneumonia the author has seen great benefit from this mixture. The dose is for a child between one and two years of age.*

40. *Tonic and Alterative.*

℞. Syrupi ferri iodidi, ʒj.; syrupi, ʒxj. Misce. Capiat ʒj. ter die. *In tabes mesenterica, scrofulous diseases, early stages of phthisis, &c.*

Vel.

℞. Ferri ammonio-citratis, gr. xij.; potassii iodidi, gr. iv.; tincturæ hyoscyami, ♏xvj.; aquæ destillatæ, ad ℥iss. Misce. *One-eighth part to be taken three times a-day, with the meals, in sweetened water.*

Tonic and Alterative—continued.

℞. Potassii iodidi, gr. iv.; ferri ammonio-citratis, ℈j.; syrupi papaveris, ʒiij.; infusi quassiæ, ℥iij. Misce. Sumat ℥ss. ter die. *For a child two years old, affected with scrofula, tabes mesenterica, &c.*

Vel.

℞. Vini ferri, syrupi tolutani, āā ℥ss.; liquoris potassæ arsenitis, ♏xxxij.; aquæ anethi, ℥j. Misce. Fiat mistura. (*Erasmus Wilson.*) *The dose for an infant about one year old, is one drachm thrice daily, directly after the meals. Almost a specific in eczema infantile.*

Vel.

℞. Olei jecoris aselli, ℥ij; vitelli ovi, j.; liquoris potassæ arsenitis, ♏lxiv.; syrupi simplicis, ʒij.; aquæ fontanæ, q. s. ad ℥iv. Misce. Fiat mistura. (*Erasmus Wilson.*) *The dose is a drachm three times a-day, with or directly after meals.*

41. *Alterative, Tonic, and Aperient.*

℞. Tincturæ jalapæ, ʒss.; tincturæ rhei compositæ, ʒj.; decocti taraxaci, ʒviss. Misce. Capiat ʒij. omni mane. *For an infant one year old, with constipation dependent on feeble peristaltic action of intestines.*

42. *Alterative and Diaphoretic.*

℞. Hydrargyri chloridi, gr. iv.; pulveris ipecacuanhæ, gr. ij.; sacchari albi, ℈j. Misce, et divide in pulveres viij. *One of these powders may be given to a child twelve months old, every four hours, in acute bronchitis, pneumonia, &c. If the calomel irritates the bowels,* gr. ss. *of Dover's powder should be added to every third or fourth powder.*

43. *Astringent and Alterative.*

℞. Mucilaginis acaciæ, ℥ss.; sodæ sesquicarbonatis, gr. v.; olei terebinthinæ, ♏iv.—x.; misturæ amygdalæ, ℥ss. Misce. Fiat haustus ter die sumendus. *In severe forms of purpura.*

44. *Alterative and Tonic.*

℞. Quinæ disulphatis, gr. ij.; hydrargyri chloridi, gr. j. Misce, et divide in pulveres quatuor. *One powder to be mixed with sugar and given twice a day, in severe cases of ophthalmia neonatorum.*

45. *Aromatic Astringent.*

℞. Confectionis aromatici, ℈j.; tincturæ hyoscyami, ♏v.; infusi krameriæ, ℥iss. Misce. Capiat ʒj.—ʒij. ter quaterve in die. *In the simple diarrhœa of an infant about one year of age.*

46. *Alterative and Astringent.*

℞. Olei ricini, ʒj.; pulveris acaciæ, sacchari albi, āā ʒss. tincturæ opii, ♏iv.; aquæ cinnamomi, ʒvij. Misce. ʒj. quartâ quâque horâ. *For a child one year old, suffering from dysentery. A similar mixture was found by Dr. Baly to be very valuable in the treatment of dysentery among the prisoners in Millbank Penitentiary.*

47. *Astringent and Sedative.*

R. Pulveris cretæ compositi cum opio, ℈j.; infusi catechu compositi, ʒxij. Misce. Sumat ʒj. ter die. *For a child one year old, with chronic diarrhœa.*

Vel.

R. Tincturæ catechu compositæ, ʒij.; confectionis aromatici, ʒss.; tincturæ opii, ♏iij.; misturæ cretæ, ʒx. Misce. Capiat ʒij. omnibus sextis horis. *In simple diarrhœa. For a child eighteen months old.*

48. *Tonic and Astringent.*

R. Tincturæ catechu compositæ, ʒij.; syrupi, ʒij.; decocti hæmatoxyli, ℥j. Misce. Capiat ʒj. omnibus sextis horis. *For an infant one year old. Valuable in simple diarrhœa, or as a tonic during convalescence from any gastro-intestinal disorder. The only disadvantage of logwood is, that the pink evacuations which it produces permanently stain the infant's napkins.*

Vel.

R. Acidi gallici, gr. x.; tincturæ cinnamomi compositi, ʒj.; tincturæ opii, ♏vj.; syrupi, ʒiij.; aquæ cinnamomi, ʒxij. Misce. Capiat ʒij. quartâ quâque horâ. *In chronic diarrhœa. For a child one year old.*

Vel.

R. Ferri sulphatis, gr. iv.; tincturæ opii, ♏vj.; syrupi, ʒij.; infusi calumbæ, ʒx. Misce. Sumat ʒij., sextis horis. *In chronic diarrhœa.*

49. *Simple Astringent.*

℞. Aluminis, gr. xxiv.; extracti conii, gr. xij.; syrupi rhœados, ʒij.; aquæ anethi, ℥iij. Misce. Capiat cochleare medium sextâ quâque horâ. *For a child two or three years of age, suffering from pertussis, when all inflammatory symptoms have ceased.*

50. *Astringent Enemata.*

℞. Argenti nitratis, gr. j.; aquæ destillatæ, ℥iij. Solve. *For a child one year old, with inflammatory diarrhœa.*

Vel.

℞. Extracti krameriæ, gr. xv.; aquæ destillatæ, ℥iij. Solve. *For a child one year old. In inflammatory diarrhœa.*

Astringent Enemata—continued.

R. Olei terebinthinæ, ʒj.; tincturæ catechu compositæ, ʒss.; tincturæ opii, ♏v.; decocti amyli, ℥iss. Misce, fiat enema. *May be employed twice daily, in children between three and eight years of age, to check the purging in typhoid fever.*

51. *Stomachic and Tonic.*

R. Acidi sulphurici diluti, ♏xv.; tincturæ aurantii, syrupi aurantii, āā ʒij.; infusi aurantii compositi, ℥iss. Misce. Capiat ʒij. ter die. *For a child with weak digestive powers.*

52. *Stimulant and Expectorant.*

℞. Ammoniæ sesquicarbonatis, gr. ij.; tincturæ scillæ, ♏v.; sacchari fæcis, ʒss.; decocti senegæ, ℥ss. Misce, fiat haustus, secundâ quâque horâ sumendus. *An excellent stimulant expectorant for young children recovering from croup.*

Vel.

R. Ammoniæ sesquicarbonatis, gr. viij.; tincturæ scillæ, ♏xvj.; syrupi tolutani, ʒiv.; decocti senegæ, ℥ij. Misce. Capiat ʒij.—ʒiv. quartâ quâque horâ. *For a child from one to four years of age, suffering from chronic bronchitis. The taste will be best disguised by administering it in water well sweetened with brown sugar.*

Vel.

R. Ammoniæ sesquicarbonatis, gr. vj.; tincturæ scillæ, ʒss.; syrupi papaveris, ʒij.; decocti senegæ, misturæ camphoræ, āā f.ʒvj. Misce. ʒj.—ʒij. tertiâ quâque horâ. *In chronic catarrh, the later stages of pneumonia, croup, &c.*

53. *Stimulant, Expectorant, and Sedative.*

℞. Tincturæ assafœtidæ, ʒiss.; ætheris chlorici, ♏xxv.; tincturæ camphoræ compositæ, ʒj.; decocti senegæ, misturæ camphoræ, āā ℥j. Misce. ʒj.—ʒiij. tertiâ quâque horâ. *Very useful in bronchitis and pneumonia, when the acute symptoms have been subdued.*

54. *Antispasmodic and Carminative.*

℞. Spiritûs ammoniæ aromatici, ♏viij.; ætheris chlorici, ♏iv.; tincturæ opii, ♏ij.; misturæ amygdalæ, aquæ carui, āā ℥ss. Misce. Capiat ʒj. ter quaterve in die. *In flatulence with gastro-intestinal disturbance. For an infant between eight and twelve months of age.*

55. *Stimulant and Antispasmodic.*

R. Spiritûs ammonia aromatici, spiritûs ætheris compositi, āā ♏xx.; syrupi papaveris, ʒij.; aquæ anethi, ʒx. Misce. Capiat ʒj.—ʒiij. tertiâ quâque horâ. *A valuable stimulant in certain low forms of fever, in convalescence from pulmonary affections, and in some spasmodic diseases. The smallest dose may be given to an infant three months old.*

56. *Stimulant, Expectorant, and Antispasmodic.*

℞. Spiritûs ammoniæ aromatici, ʒss.; ætheris chlorici, ♏xij.; tincturæ assafœtidæ, ʒj.; misturæ camphoræ, ℥iij. Misce. Dosis, ℥ss. omnibus sextis horis. *In diseases of the lungs and air-passages after the subsidence of the acute symptoms, when a stimulant, expectorant, and antispasmodic is required.*

57. *Antispasmodic and Stimulant.*

℞. Spiritûs ammoniæ aromatici, ʒss.; ætheris chlorici, ♏xx.; tincturæ assafœtidæ, ʒj.—ʒij.; tincturæ camphoræ compositæ, ʒss.; aquæ pulegii, ʒxij. Misce. ʒj.—ʒij. quartâ quâque horâ. *In some cases of hooping-cough, laryngismus stridulus, and other convulsive affections.*

Vel.

℞. Spiritûs ammoniæ aromatici, spiritûs ætheris compositi, āā ʒss.; acidi hydrocyanici diluti, ♏vj.; tincturæ opii, ♏iv.; misturæ camphoræ, ℥iij. Misce. Capiat ℥ss. quartâ quâque horâ. *In passive cerebral congestion, &c.*

58. *Stimulant and Tonic.*

℞. Ammoniæ sesquicarbonatis, gr. viij.; ætheris chlorici, ♏vj.; tincturæ cinchonæ compositæ, ʒj.; aquæ menthæ viridis, ad ℥ij. Misce. Sumat ʒij. omnibus sextis horis.

59. *Alkaline Tonic.*

℞. Ammoniæ sesquicarbonatis, gr. j.—gr. v.; potassæ chloratis, gr. v.—gr. x.; decocti cinchonæ, ℥ss. Misce. Fiat haustus ter die sumendus. *For a child between two and twelve years of age, suffering from scurvy, gangrene of the mouth, &c.*

60. *Simple Tonic.*

℞. Extracti cinchonæ, ʒj.; tincturæ cinchonæ compositæ, ʒij.; aquæ carui, ʒx. Misce. ʒj. ter quotidie e lacte. *For an infant one year old. Dr. West states that the taste of this mixture is best concealed by mixing it with twice the quantity of sweetened milk.*

61. *Stimulant and Antispasmodic,*

℞. Aquæ anisi, ℥j.; mucilaginis gummi acaciæ, ℥ss.; olei terebinthinæ rectificati, ʒss.; syrupi, ʒiv. Misce. ʒj.—ʒij. horâ quâque tertiâ. (*Maunsell and Evanson.*)

62. *Expectorant and Tonic.*

℞. Tincturæ Scillæ, ♏xvj.; tincturæ conii, ♏xl.; tincturæ calumbæ, ʒiij.; infusi carcarillæ, misturæ ferri compositæ, āā ℥j. Misce. Capiat ʒij. ter die. *For a child about two years old, suffering from hooping-cough with anæmia. Also in convalescence from bronchitis, &c.*

63. *Quinine and Acid Mixture.*

℞. Quinæ disulphatis, gr. iij.; syrupi, ʒiij.; infusi rosæ compositi, ʒxij. Misce. Capiat ʒij. ter die.

Quinine and Acid Mixtures—continued.

℞. Tincturæ quinæ compositæ, ʒiij.; infusi aurantii compositi, ad ℥iij. Misce. Signetur.—"A small tablespoonful to be taken twice a-day with one teaspoonful of cod-liver oil." *In scrofulous diseases.*

Vel.

℞. Quinæ disulphatis, gr. j.; acidi sulphurici diluti, ♏j.; syrupi aurantii, ʒss.; aquæ, ʒiiiss. Misce. Ter die sumendus. *Very useful in strumous ophthalmia, some forms of urticaria, and in almost all cases of debility.*

64. *Quinine and Iron.*

℞. Quinæ disulphatis, ferri sulphatis, āā gr. ij.; acidi sulphurici diluti, ♏v.; infusi calumbæ, ℥ij. Misce. Capiat ʒij.—ʒiv. ter die.

Vel.

℞. Quinæ et ferri citratis, gr. j.; tincturæ calumbæ, ♏x.; infusi ejusdem, ad ℥ss. Misce, fiat haustus ter die sumendus. *An excellent tonic during convalescence from acute disease.*

65. *Citrate of Iron.*

℞. Ferri citratis, gr. xij.; aquæ destillatæ, ℥iij. Misce. Dosis, ℥ss. ter die.

66. *An Acid Stimulant.*

℞. Acidi hydrochlorici diluti, ♏iv.; spiritûs ætheris compositi, ♏viij.; misturæ camphoræ, ʒiij. Misce, fiat haustus omnibus sextis horis sumendus. *Recommended by Dr. Stieglitz, of St. Petersburgh, as a stimulant for a child, aged about five, suffering from typhoid fever.*

67. *Stimulant and Antispasmodic.*

℞. Acidi nitrici diluti, ʒxij.; tincturæ cardamomi compositæ, ʒiij.; syrupi simplicis, ℥iiiss.; aquæ, ℥j. Misce. Sumat ʒj.—ʒij. secundâ quâque horâ. *Dr. Gibb states that nitric acid is a specific in the treatment of hooping-cough, curing the disease in from two to fifteen days. He recommends this formula.*

68. *Alkaline Laxative and Tonic.*

℞. Sodæ bicarbonatis, ℈j.; tincturæ rhei, ʒij.; infusi calumbæ, decocti taraxaci, āā ʒvij. Misce. Capiat ʒij. nocte maneque. *For a child one year old, suffering from dyspepsia, with offensive breath, acid eructations, sour evacuations, and constipation.*

69. *Muriatic Acid and Cascarilla.*

℞. Acidi hydrochlorici diluti, ♏xvj.; tincturæ aurantii, syrupi ejusdem, āā ʒiss.; infusi cascarillæ, ℥j. Misce. Sumat cochleare parvum ter die. *For a child one year of age, with indigestion produced by insufficient secretion of the gastric juice.*

70. *Soluble Combination of Phosphate and Carbonate of Lime.*

℞. Calcis phosphatis, ʒij.; calcis carbonatis, ʒj.; sacchari lactis, ʒiij. Misce. Capiat ʒss. bis die. *Lactate of iron may be substituted for the sugar of milk in weak rickety children. In case of softening of the bones this remedy will probably be found very valuable.*

71. *Enema of Assafœtida for a Child.*

℞. Tincturæ assafœtidæ, ♏xxx.; decocti hordei, ℥iss. Misce. *This may be administered night and morning, in cases where the stomach will not tolerate assafœtida.*

72. *Nutritious Enemata.*

Cod-liver oil, ʒj.; potassio-tartrate of iron, ℈j.; cow's milk, ℥j. *Mix, and administer night and morning.*

Vel.

Strong beef-tea, ℥iv.; melted butter, ℥ss.; port wine, ʒij.; flour, ʒij. Mix.

73. *Sedative Mixture.*

℞. Tincturæ opii, guttam; syrupi, misturæ acaciæ, āā ℥ss. Misce. Dosis, ʒj. omni horâ, donec supervenerit somnus. *To an infant under two months not more than three successive doses should be administered; and when the desired effect has been produced, five or six hours should elapse before repeating its use.*

Vel.

℞. Tincturæ camphoræ compositæ, ♏xvj.; mucilaginis acaciæ, syrupi rhœados, āā ʒij.; misturæ camphoræ, ʒiv. Misce. Capiat ʒj. bis terve indies. *A safe narcotic for the youngest infant, when the use of opium is indicated.*

74. *Sedative Enema.*

℞. Tincturæ opii, ♏iij.; decocti amyli, ℥ss. Misce. *For an infant one year old, suffering from urgent tenesmus, dysentery, &c.*

75. *Sedative and Expectorant.*

℞. Vini ipecacuanhæ, ʒiss.; sodæ bicarbonatis, gr. xij.; tincturæ opii, ♏iij.; syrupi rhœados, ʒiij.; misturæ camphoræ, ℥iss. Misce. ʒj.—ʒij. tertiâ vel secundâ quâque horâ. *In pneumonia or bronchitis with great irritability of the bowels.*

76. *Sedative and Depressant.*

℞. Tincturæ digitalis, tincturæ lobeliæ, āā ♏xij.; syrupi croci, ʒj.; aquæ cinnamomi, ad ℥j. Misce. Sumat ʒj. tertiâ vel quartâ quâque horâ. *As a substitute for antimony in some forms of pneumonia, bronchitis, &c.*

77. *Sedative and Antispasmodic.*

℞. Syrupi rhœados, ℥j.; acidi hydrocyanici diluti (Ph. Lond.) guttam. Misce. ʒj. bis terve indies. *For an infant six months old. If it disagrees or produces head symptoms it must be discontinued.*

78. *Sedative and Tonic.*

℞. Acidi hydrocyanici diluti (Ph. Lond.) guttæ, iv.; syrupi papaveris, ʒij.; infusi aurantii compositi, ʒvj. Misce. ʒj. ter die. *For an infant one year old.*

79. *Simple Antispasmodic.*

℞. Tincturæ assafœtidæ, ʒss.; syrupi rhœados, ℥j. Misce. *In flatulent colic one teaspoonful may be given every hour until relief is obtained.*

80. *Infantile Sedative and Diuretic.*

℞. Potassæ nitratis, gr. xvj.; tincturæ digitalis, ♏viij.; liquoris ammoniæ acetatis, ʒij.; aquæ anethi, ʒvj. Misce. ʒj.—ʒij. quartâ quâque horâ. *In anasarca dependent on cardiac disease, and in some inflammatory affections.*

81. *Simple Diuretic.*

℞. Infusi digitalis, ʒiss.; syrupi mori, ʒvj. Misce. ʒj. quartâ quâque horâ.

82. *Sedative and Antispasmodic.*

℞. Acidi hydrocyanici diluti, ♏iv.; sodæ bicarbonatis, gr. x.; spiritûs ætheris compositi, ♏xij.; syrupi papaveris, ʒij.; aquæ destillatæ, ʒvj. Misce. Capiat ʒj. omnibus sextis horis. *For a child nine months old suffering from pertussis.*

Vel.

℞. Acidi hydrocyanici diluti, ♏viij.; spiritûs ammoniæ fœtidæ, ʒss.; tincturæ hyoscyami, ♏x.; syrupi aurantii, ℥ss.; spiritûs anisi, ʒj.; aquæ ℥j. Misce. Capiat cochleare parvum ter die. *Recommended by Dr. James Reid in laryngismus stridulus or spasm of the glottis. For a child one year old.*

Vel.

℞. Tincturæ assafœtidæ, ʒss.; oxymellis scillæ, ʒj.; tincturæ opii, ♏ij.; syrupi rhœados, ad ℥j. Misce. *One teaspoonful may be given every two or three hours for three doses.*

83. *Belladonna for Children.*

℞. Extracti belladonnæ, gr. j.; syrupi, ʒiij.; aquæ, ad ℥iss. Misce. Capiat ʒj.—ʒij. ter die. *Valuable in incontinence of urine, in children between three and seven years of age, where there is nervous irritability. A small belladonna plaster may also be applied over the sacrum.*

84. *Benzoated Oxide of Zinc Ointment.*

℞. Adipis preparatæ, ℥vj.; gummi benzoini, pulveris, ʒj. Liquefac, cum leni calore, per horas viginti quatuor, in vaso clauso; dein cola per linteum, et adde

Oxydi zinci, purificati, ℥j. Misce bene, et per linteum exprime.

For use, one ounce of this ointment is to be rubbed down with one drachm of spirits of wine, or spirits of camphor, or distilled glycerine, or liquor plumbi diacetatis, &c. *It is highly recommended by Erasmus W*[illegible] *to alleviate the local distress, in eczema infantile, impetigo, &c.*

85. *Carron Oil.*

℞. Olei lini, liquoris calcis, āā ℥iij. Misce, fiat lotio. *For irritable ulcers, burns, and as a soothing application to the pustules in small-pox.*

Vel.

℞. Liquoris calcis, olei amygdalæ, āā ℥j. Bene admisce et adde adipis preparatæ, ℥j. Misce. *This ointment is more soothing than the carron oil, and is invaluable in irritable ulcers and sores from blisters, &c., in children.*

86. *Stimulating Liniment.*

℞. Linimenti camphoræ compositi, ℥iss.; tincturæ lyttæ, tincturæ opii, āā ʒij. Misce. Fiat linimentum. *To be gently rubbed over the back of the chest in hooping-cough, infantile bronchitis, &c.*

Vel.

℞. Linimenti camphoræ compositæ, linimenti saponis, āā ℥ss. Misce. *To be rubbed over the thorax and spine, in cases of Atelectasis.*

87. *Embrocations for Chilblains.*

One ounce of bruised oak-galls should be boiled for an hour in two pints of water; the fluid, employed two or three times a day, forms a most efficacious application. The same result is obtainable by means of a decoction of oak-bark, or by a solution of half an ounce of tannic acid in ℥vj. of water. If no ulcerations are present, we may also employ tincture of galls. Tannin as a hæmostatic and styptic, inducing no irritation or pain, is of the greatest service.

88. *Red Precipitate Ointment.*

℞. Hydrargyri præcipitati rubri, gr. x.—ʒss.; axungiæ, ℥j. Misce bene, et fiat unguentum. *Recommended by Dr. Mackenzie, in catarrhal ophthalmia, ophthalmia tarsi, opacity of the cornea, &c., applied along the edges of the eyelids.*

89. *Iodine Paint.*

℞. Iodinii, ʒj.; potassii iodidi, ʒss.; spiritûs vini rectificati, ℥j. Misce. *To be applied gently with a camels'-hair pencil. For young children this paint should be further diluted.*

90. *Iodine Ointment.*

℞. Unguenti iodinii compositi, ʒj.; adipis, ʒij. Tere simul. *Useful when rubbed over the thyroid gland in bronchocele, or over enlarged scrofulous glands, or upon the tumid bellies of children suffering from mesenteric disease.*

Vel.

℞. Potassii iodidi, ℈ss.—ʒss.; adipis, ℥j. Misce, fiat unguentum. *Useful as an application to strumous ulcers.*

91. *Iodurretted Baths for Children.*

Age.	Water.	Iodine.	Iodide of Potassium.
	Quarts.	Grs. Troy.	Grs. Troy.
4 to 7	36	30 to 36	60 to 72
7 to 11	75	48—60—72	96—120—144
11 to 14	125	72—96	144—192

Baths of this nature are recommended by Lugol in the treatment of scrofula. They should be employed in wooden vessels.

92. *Tan Bath.*

Three handfuls of bruised oak-bark are to be boiled in three quarts of water for about half an hour. The decoction is to be strained, and then added to the tepid water of the child's bath. *Recommended by Dr. Elsässer to be used daily for several weeks in most of the diseases of childhood where debility is the prominent symptom. It is a very valuable remedy from which I have seen marked benefit.*

93. *Sulphurous Acid Lotion.*

The solution of sulphurous acid, recommended by Dr. Jenner in cases of tinea, is made by passing a stream of the gas through water to saturation. Two ounces of this saturated solution are then added to six ounces of water to make the lotion.

94. *To remove Bruise Marks, "Black Eye," &c.*

A poultice made of black bryony-root (deprived of its bark, and scraped) and bread crumbs or flour, should be inclosed in a thin muslin bag, and applied over the injured part. It will generally cause the ecchymosis to disappear within twenty-four hours, in a child. If the bryony-root cannot be procured, the poultice may be made with a solution of the hydrochlorate of ammonia. (*Tyrrell.*)

95. *Borax Gargle.*

℞. Sodæ biboratis, ℈ij.; aquæ, ℥iss. Misce. *This lotion is very useful in thrush, applied several times in the day by means of a piece of lint. It is better than the preparation of honey and borax usually employed; since sugar, from its tendency to ferment, probably favours the formation of confervæ.*

96. *Nitrate of Silver Gargle.*

℞. Argenti nitratis, gr. vj.; aquæ destillatæ, ℥j. Misce. *To be applied by means of a camels'-hair pencil once or twice daily, in such cases of thrush as do not yield to the application of borax.*

97. *Astringent Collyrium.*

℞. Aluminis, gr. xij.; aquæ rosæ, ℥vj. Solve. Fiat aqua ophthalmica.

Vel.

R. Zinci sulphatis, gr. vj.; aquæ rosæ, ℥iij. Misce, fiat collyrium. *In ophthalmia tarsi, &c.*

Vel.

R. Zinci sulphatis, gr. xvj.; vini opii, ʒj.; aquæ rosæ, ℥viij. Fiat solutio, pro aqua ophthalmica.

98. *Sedative Collyrium.*

℞. Extracti belladonnæ, ℈j.; aquæ, ℥vj. Solve et per linteum cola. *A piece of lint wetted with this lotion may be kept applied over the eye, in painful ophthalmia.*

Vel.

R. Hydrargyri bichloridi, gr. j.; atropiæ sulphatis, gr. ij.; ammoniæ hydrochloratis, gr. viij.; aquæ rosæ, ℥viij. Solve. *Recommended by Dr. Mackenzie as an eye-wash, in ophthalmia neonatorum when the cornea is ulcerated.*

99. *Solution of Atropine.*

℞. Atropiæ sulphatis, gr. j.; aquæ destillatæ, ʒj. Misce. *Dilatation of the pupil is effected most speedily and is longest maintained by a solution of this kind. A full drop must be placed in the eye by means of a camels'-hair pencil; the effect will be produced in from fifteen to twenty minutes, and will sometimes continue for seven or eight days.*

100. *Alterative Collyrium.*

℞. Hydrargyri bichloridi, gr. j.; ammoniæ hydrochloratis, gr. viij.: aquæ rosæ, ℥viij. Solve. (*Wharton Jones, Mackenzie, &c.*) *In ophthalmia tarsi, &c., applied frequently by means of a piece of sponge.*

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